

COLD LAKE RESOURCE DEVELOPMENT  
DISCUSSION PAPER

Carcajou Research Limited  
November 1984

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A DISCUSSION PAPER ON THE POSSIBLE EFFECTS OF  
RESOURCE DEVELOPMENT PROJECTS IN THE COLD LAKE REGION  
OF NORTHERN ALBERTA

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Prepared for  
Northern Development Branch  
Alberta Tourism and Small Business

Prepared by  
Carcajou Research Limited  
Edmonton, Alberta

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1. INTRODUCTION

This Discussion Paper was commissioned by the Northern Alberta Development Council (Northern Development Branch, Alberta Tourism and Small Business) in the Fall of 1984. It deals with economic developments that are taking place in the Cold Lake area, and with the nature of their possible effects on local people and communities. The specific objectives are:

1. To pull together existing information concerning the economic, demographic and social characteristics of the area;

This was accomplished by up-dating and expanding existing community profiles; the results are presented in Section II.

2. To describe present and anticipated future resource development projects of all sizes, and examine plans for activities (if any) in other sectors such as tourism, agriculture, forestry, etc.

The results are presented in an over-view of the regional economy in Section III, and a survey of oil sands development projects in Section IV.

3. To prepare a Discussion Paper outlining possible social and economic effects of projects on the area and identifying issues raised by development; and specifically, to explore the hypothesis that the cumulative effect of developments now under way may in some ways match the effects that would have been experienced if the mega-project proposed in the late 1970's had gone ahead.

This analysis is contained in Section V.

The Discussion Paper is designed as a preliminary, not a final effort at description and analysis. It is not a systematic attempt to predict the effects of development. In commissioning the Paper, the Northern Alberta Development Council was taking the first step to respond to concerns that were raised by local people through the Community Advisory Committee. The purpose of the Paper is to feed a process by which, on the basis of the best available present sources of information, issues can be more clearly defined and agendas for further research prepared. This process will no doubt involve all the interested parties including local people, the companies undertaking development, and government agencies.

The Study area is shown on the map on Page 3, with locations of communities and the sites for activity by different companies.

Information was obtained from:

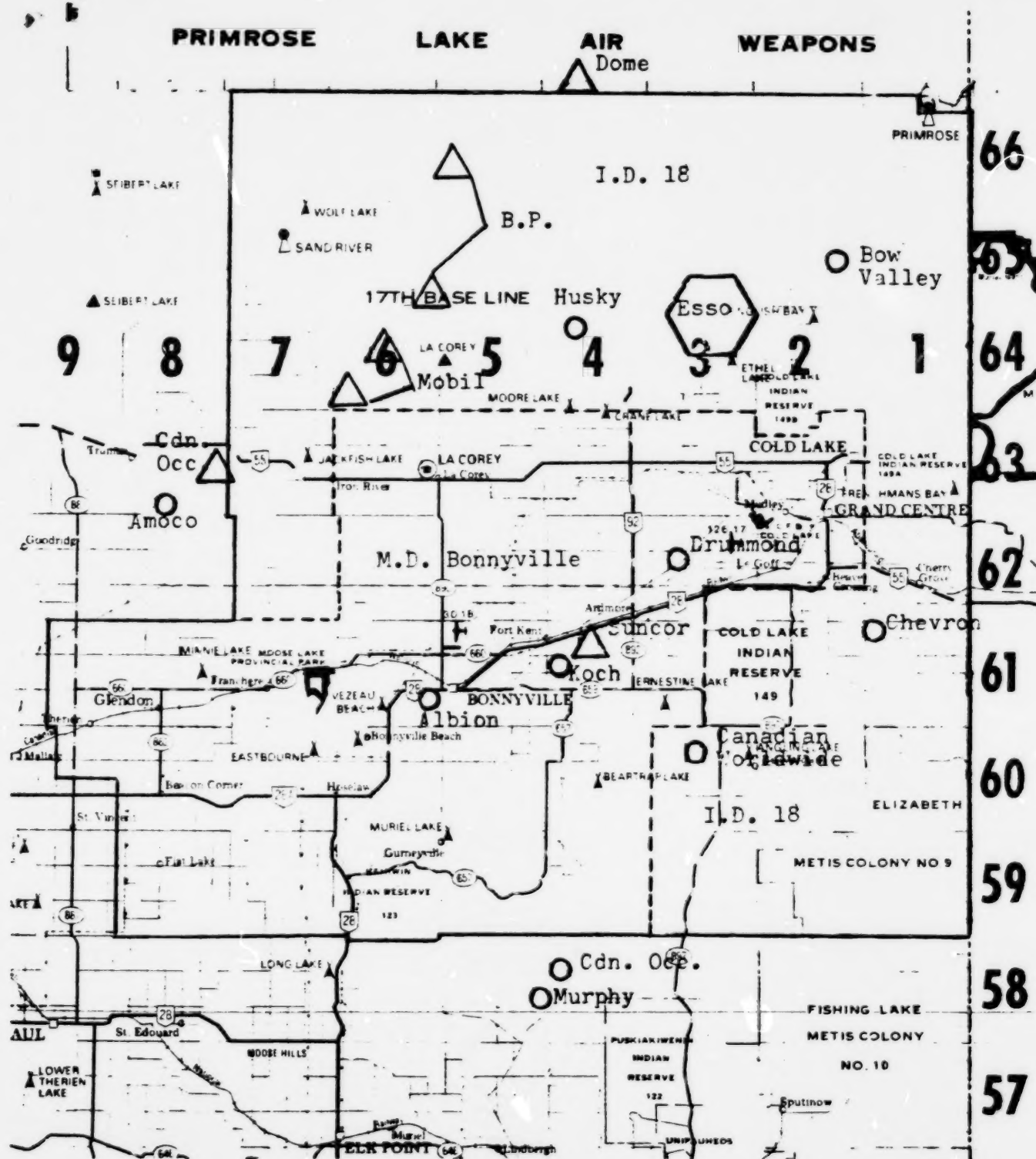
- (1) Discussions with members of the Community Advisory Committee, local officials and other local people;
- (2) Discussions with representatives of companies and government agencies;
- (3) Survey of previous research reports and other published sources.

Because time was very limited, the discussions could not include all interested people. To repeat: the goal of this project is only a preliminary Discussion Paper. Any further processes would no doubt involve a larger group of people.

The model used for analysis and presentation of possible effects was developed through research in other Alberta communities and areas that have experienced industrial development, such as Fort McMurray, Grande Prairie, Grande Cache, Hinton, and Fort Saskatchewan.

The fact that the developments anticipated are individually small in size complicates the analysis somewhat, and means that transfer of results from previous research must be done carefully. The methods by which a large project are carried out (community relations, infrastructure development, hiring practices, environmental planning and control, etc.) can be very different from the methods used by small projects.

Every effort has been made to ensure that the material that went into this Paper is factually accurate, but inevitably, considering the limited time that was available, errors of fact will creep in from time to time. Not all statements could be securely verified. As long as these errors do not add up to a major misrepresentation of the characteristics of the area or the nature of the proposed developments, then no harm is done, since the exercise is preliminary in nature and designed to provoke thought and discussion. Errors can be corrected as the process continues.



Map: Study Area and Location of Oil Sands Projects

## II. COMMUNITY PROFILES

The following profiles of the Municipal District of Bonnyville, the Village of Glendon, the Towns of Bonnyville, Cold Lake and Grande Centre, the Canadian Forces Base, the Elizabeth Métis Settlement, and the Kehewin and Cold Lake Indian Reserves are based initially on the profiles published in March 1983 by the Northern Alberta Development Council, and prepared by SATA Systems Inc. The material in standard type is taken directly from the N.A.D.C. profiles, with minor editorial revision where necessary. The material in italics has been added by Carcajou Research.

Because the N.A.D.C. profiles concentrated on smaller centres, the amount of material added is a much greater proportion for the Towns of Bonnyville and Grand Centre than for the other areas.

The information added by Carcajou was based only on statistical sources available through published reports and the records of government agencies, and on discussions with various informants by telephone. No new field work was done for the community profiles. These limitations are consistent with the preliminary nature of this Paper.

Maps and photographs included in the N.A.D.C. profiles have not been reproduced.

Not all sections of profiles were up-dated; new data were sought only if they were relevant to the analytical purposes of this project. The following sections were eliminated from the profiles:

Financial Data for Municipalities --

these contain so little detail, and are now so out of date, that they are completely uninformative.

Location and Access --

the information is more efficiently presented in the Map on Page 3.

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\*  
\* THE MUNICIPAL DISTRICT OF BONNYVILLE \*  
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### TOPOGRAPHY AND PHYSICAL FEATURES

The topography of the M.D. of Bonnyville is characterized by an abundance of lakes. The most dominant feature is Cold Lake (area approximately 221 sq. km), which touches the northeast corner of the M.D. The countryside is rolling, and much of it is wooded.

The central and southwest portions of the M.D., in the Bonnyville and Glendon areas, have moderate agricultural capabilities. This area is considered to have the highest agricultural capability in the M.D., and is rated Class 3 by the Canada Land Inventory Classification for agriculture.

Forested lands, largely stands of aspen, are scattered throughout the region, interspersed with cleared agricultural lands, river valleys, other water courses, and lakes.

The Canada Land Inventory for recreation indicates that approximately 44% of Alberta's high capability recreational shoreland can be found in the Lakeland Region. The Cold Lake sub-region represents 14% of the Lakeland Region, and contains 12% of the Province's best shoreland. These lake shorelands are relatively undeveloped.

### HISTORICAL POPULATION

There have been two major influences on the population of the M.D. of Bonnyville. The first was agricultural settlement of the area, which began in the early 1900's and continued until 1941. The second was establishment of the Canadian Forces Base at Medley (near Grande Centre) in 1952. Table 1 shows the population contained by the boundaries of the M.D. in 1984 (excluding Indian Reserves); Table 2 shows the growth of that population since 1956.

The population of the M.D. itself (approximately 9,500 in 1984) includes an estimated 6,000 people resident on the Canadian Forces Base Cold Lake, in the community of Medley.

---

Table 1

*Municipal District of Bonnyville*  
*Population Contained by the Boundaries of the M.D. -- 1984*  
*(excluding Indian Reserves)*

|                      |        |
|----------------------|--------|
| M.D. of Bonnyville   | 9,409  |
| Village of Glendon   | 455    |
| Town of Bonnyville   | 4,786  |
| Town of Cold Lake    | 2,515  |
| Town of Grand Centre | 3,195  |
| Total                | 20,360 |

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Source: Alberta Municipal Affairs

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Table 2

*Municipal District of Bonnyville*  
*Growth of the Population Contained by the Boundaries -- 1956 to 1984*  
*(Excluding Indian Reserves)*

| <u>Year</u> | <u>Population</u> |
|-------------|-------------------|
| 1956        | 14,072            |
| 1961        | 15,060            |
| 1966        | 16,587            |
| 1971        | 17,273            |
| 1976        | 17,208            |
| 1978        | 17,507            |
| 1979        | 18,389            |
| 1980        | 19,420            |
| 1981        | 19,910            |
| 1982        | 19,564            |
| 1984        | 20,360            |

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Source: Statistics Canada and Alberta Municipal Affairs

POPULATION CHARACTERISTICS

Table 3 shows age and sex characteristics of the population of the Municipal District of Bonnyville in 1981.

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Table 3  
Municipal District of Bonnyville  
Age and Sex Characteristics of the Population -- 1981

| <u>Age Range</u> | <u>Males</u> | <u>Females</u> |
|------------------|--------------|----------------|
| 0-14             | 1,530        | 1,400          |
| 15-34            | 1,945        | 1,790          |
| 35-64            | 1,410        | 1,100          |
| 65 Plus          | 135          | 95             |
| Total            | 5,020        | 4,390          |

---

Source: Alberta Bureau of Statistics

Note: data are randomly rounded to end in "0" or "5".

According to the 1981 Census of Canada, 39.8% of the residents of the M.D. were in-migrants to the region.

LABOUR FORCE ACTIVITY -- 1981

In the M.D. in 1981 the male population aged 15 years and over was 3,490, of which 85.7% were participating in the labour force. The female population aged 15 years and over was 2,980; the labour force participation rate was 52.0%. Table 4 shows labour force activity for males and females by major occupational groups.

Table 4

Municipal District of Bonnyville Labour Force Activity  
by Major Occupational Groups -- 1981

| <u>Occupational Group</u>        | <u>Number</u> | <u>Percent of<br/>Labour Force</u> |
|----------------------------------|---------------|------------------------------------|
| <u>Males</u>                     |               |                                    |
| Service Occupations              | 1,530         | 51.2                               |
| Primary Occupations*             | 576           | 19.2                               |
| Construction                     | 298           | 9.9                                |
| Other Occupations                | 590           | 19.7                               |
| Total Labour Force               | 2,990         |                                    |
| <u>Females</u>                   |               |                                    |
| Service Occupations              | 580           | 37.4                               |
| Clerical and Related Occupations | 330           | 21.3                               |
| Primary Occupations*             | 155           | 10.0                               |
| Other Occupations                | 485           | 31.3                               |
| Total Labour Force               | 1,550         |                                    |

\* Includes farming, fishing, trapping and forestry.

Source: Alberta Bureau of Statistics

HOUSING CHARACTERISTICS AND DEVELOPMENT PERMITS

Table 5 shows the characteristics of housing in the M.D. of Bonnyville in 1981. Table 6 shows the value of development permits from 1981 to 1984. Table 7 shows statistics on new residential development in the same years.

Table 5

*Municipal District of Bonnyville Housing Characteristics -- 1981*  
(Includes Community of Medley)

|                                                 |       |
|-------------------------------------------------|-------|
| Total Number of Occupied Private Dwellings      | 2,490 |
| Detached Dwellings                              | 1,435 |
| Attached Dwellings                              | 800   |
| Apartments                                      | 15    |
| Duplexes                                        | 50    |
| Total Population in Private Households          | 8,750 |
| Average Number of Persons per Private Household | 3.5   |

Source: Alberta Bureau of Statistics

Table 6

*Municipal District of Bonnyville*  
*Value of Development Permits -- 1981 to 1984*  
(All Amounts in Thousands of Dollars)

|               | <u>New</u><br><u>Residential</u> | <u>Residential</u><br><u>Additions</u> | <u>Mobile</u><br><u>Homes</u> | <u>Other</u> | <u>Total</u> |
|---------------|----------------------------------|----------------------------------------|-------------------------------|--------------|--------------|
| 1981          | 3,613                            | 133                                    | 290                           | 2,620        | 6,656        |
| 1982          | 2,725                            | 44                                     | 254                           | 6,117        | 9,170        |
| 1983          | 3,401                            | 168                                    | 243                           | 1,943        | 5,756        |
| 1984 (9 mos.) | 2,817                            | 115                                    | 492                           | 2,387        | 5,811        |

Source: Alberta Bureau of Statistics

Note: Totals may not add correctly due to rounding.

Table 7

*Municipal District of Bonnyville Residential Development -- 1981 to 1984*

| <u>Year</u>   | <u>New<br/>Dwellings</u> | <u>Mobile<br/>Homes</u> | <u>Total</u> |
|---------------|--------------------------|-------------------------|--------------|
| 1981          | 79                       | 14                      | 93           |
| 1982          | 61                       | 14                      | 75           |
| 1983          | 67                       | 14                      | 81           |
| 1984 (9 mos.) | 63                       | 33                      | 96           |

Source: Alberta Bureau of StatisticsECONOMIC BASE

As Table 5 shows, the people of the Municipal District of Bonnyville are employed primarily in service occupations (primarily military) and in primary industries such as agriculture, trapping and fishing. Forestry is not a highly developed industry. Many tourist activities, and much of regional oil sands development also takes place in the M.D., but with the exception of construction camps, employees usually reside in one of the towns.

According to the 1976 Alberta Census of Agriculture, the total farm acreage in the M.D. was 443,905 acres (179,718 ha), with the average farm consisting of 648 acres (262 ha). The total improved land in the M.D. was 250,909 acres (101,582 ha). Major crops include barley, oats, wheat and rapeseed. Many farms mix grain crops, cow-calf operations, and forage.

The agricultural service industries are centred in the towns. A seed cleaning plant, an auction market, a Northern Alberta Dairy Pool plant, and a farmers market are all located in the Town of Bonnyville.

PHYSICAL INFRASTRUCTURERoads

Major highways are numbers 28, 28A, and 55. There is also an extensive network of secondary roads, municipal roads, and local access roads.

Railways

Railway services are provided by Canadian National. The railway passes through Glendon and Bonnyville, and continues northeast to Grand Centre and Cold Lake.

Airports

There are three landing strips in the M.D. The Bonnyville Airport has a paved, lighted strip of 914 metres. At Grand Centre the municipal airport serves small planes and private flights. Commercial flights use the Cold Lake air base, where Alberta Transportation has constructed a terminal building.

Utilities

Utility companies serving the area include the Northeastern Gas Co-op, Bonnyville Gas, Plains Western Gas, Cold Lake Transmission, Alberta Power, and AGT.

Fire Protection

The M.D. recently purchased seven new pumper trucks, which are located at Grand Centre, Fort Kent, Ardmore, Bonnyville, La Corey, Therien and Glendon. The stations are manned by volunteer fire departments.

Communication

Radio stations received in the M.D. include Lloydminster, Edmonton (AM and FM), CFCW Camrose, CHLW St. Paul, and CHCL Canadian Forces Base. Television stations include CBC and CTV. Local newspapers are the Cold Lake Sun, Bonnyville Nouvelle, and the CFB Cold Lake Courier.

MUNICIPAL GOVERNMENT

The Municipal District is governed by a reeve and six councillors. The Administration is headed by a municipal manager. The address is:

Municipal District of Bonnyville,  
Box 278,  
Bonnyville Alberta T0A 0L0  
Tel: (403) 826-3171

HAMLETS

Ardmore

Ardmore, with a 1982 population of 213, is located 20 km northeast of Bonnyville on Highway 28. Its school, operated by Lakeland Public School District No. 5460, offers kindergarten to grade 9, and had a 1981-82 enrolment of 208. The hamlet consists of 94 single family units, a community hall, a senior citizens' drop-in centre, a skating rink and a sports ground. The water and sewer system is operated by the M.D.

Fort Kent

Fort Kent is located 11 km northeast of Bonnyville on Highway 28, and had a 1982 population of 137. Lakeland School District operates a school with a 1981-82 enrolment of 104 in grades 1 to 9. It has 43 single-family housing units and an 8-unit apartment building. Recreation facilities are a skating rink, community hall, and baseball diamonds. It has a water and sewer system operated by the M.D.

La Corey

This small hamlet (1982 population: 35) is situated at the junction of Highway 55 and Secondary Road 890, 18 km north of Bonnyville. It contains 18 single family dwellings and a fire hall.

Iron River

This even smaller hamlet (1982 population: 10) is 6 miles west of La Corey on Highway 55. It has a community hall and a school offering kindergarten to grade 9. The 1981-82 enrolment was 167.

Beaver Crossing

In 1982 Beaver Crossing, 6 km south of Grand Centre on Highway 28, had a population of 24, and a community store.

Therien

The Hamlet of Therien is near the western edge of the M.D., about 6 km from the Village of Glendon. In 1982 it had a population of 44, 21 single-family dwellings, a community hall, rodeo grounds, a post office, and a fire hall. The M.D. provides the sewage system.

CLUBS AND ORGANIZATIONS

References have been found to the following clubs and organizations. The list may not be up-to-date or complete. Clubs and organizations in the towns and the Village of Glendon also commonly include residents of the surrounding rural areas (see individual community profiles).

Therien Community League  
Riverhurst 4-H Club  
A.R.M. (Alexander, Riverhurst, Medley) rural recreation  
Ardmore Community Hall  
Ardmore Senior Citizens' Step-In Centre  
Ardmore Horse Club  
Dupré Community Hall  
Easbourne Community Club  
Iron River Centennial Hall

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 \*  
 \* IMPROVEMENT DISTRICT NO. 18 -- COLD LAKE AREA \*  
 \*  
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The southeast part of I.D. 18, which covers the entire northeast corner of Alberta from Cold Lake to the Northwest Territories, is included in the Cold Lake area. It consists of an inverted L-shaped area lying north and east of the Municipal District of Bonnyville, from Wolf Lake to Cold Lake south of the Primrose Weapons Range, and then south to the Fishing Lake Métis Settlement.

The population, excluding Indian Reserves and Métis Settlements was 1,517 in 1981, of which 1,377 were rural, and 140 lived in hamlets. (Source: Alberta Municipal Affairs.)

Table 1 shows the value of Development Permits issued for the first 9 months of 1984.

Table 1

Improvement District No. 18 -- Cold Lake Area  
 Value of Development Permits -- January to September 1984

| <u>Category</u>        | <u>Permits Issued</u> | <u>Cost of Projects</u><br>( <u>\$</u> ) |
|------------------------|-----------------------|------------------------------------------|
| New Residential        | 9                     | 559,889                                  |
| Residential Addition   | 2                     | 9,000                                    |
| Mobile Homes           | 3                     | 16,200                                   |
| Summer Cottages        | 2                     | 39,000                                   |
| Industrial             | 6                     | 262,310,000                              |
| Institutional Addition | 1                     | 895,000                                  |
| Commercial             | 1                     | 950,000                                  |
| Total                  | 24                    | 264,779,089                              |

Source: Alberta Municipal Affairs

CLUBS AND ORGANIZATIONS

References have been found to the following clubs and organizations. The list may not be up-to-date or complete.

Cherry Grove Hamlet Organization  
 Cherry Grove Community Hall  
 Cherry Grove baseball teams  
 Cherry Grove square dancing

\*\*\*\*\*  
 \*  
 \* THE VILLAGE OF GLENDON \*  
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### LOCATION AND ACCESS

The Village of Glendon is located approximately 206 km northeast of Edmonton and 46 km north of St. Paul in the Municipal District of Bonnyville. The Village is on Secondary Road 882, 8 km north of Highway 28A.

### HISTORICAL SYNOPSIS

In the early 1900's homesteaders began moving into the Glendon area from North Dakota, South Dakota, Missouri, Idaho, Minnesota and some parts of Europe. As settlement developed, a school was built one mile south of Glendon's present site. When the railroad came to the area in 1928 the school and businesses moved to their present location.

The community developed as an agricultural service centre for the surrounding area. In 1956 the Village experienced a surge of economic activity and growth brought about by oil and gas discoveries. By 1958 this activity subsided and Glendon's population returned to 314 people.

### POPULATION CHARACTERISTICS

Table 1 shows the population of Glendon from 1956 to 1984. Table 2 shows the breakdown by age and sex. In 1981 the percentage of the population who were in-migrants to the village was 17.2%, according to the Census of Canada.

Table 1

Village of Glendon Population Growth -- 1956 to 1984

| <u>Year</u> | <u>Population</u> |
|-------------|-------------------|
| 1956        | 356               |
| 1966        | 340               |
| 1978        | 431               |
| 1980        | 454               |
| 1981        | 425               |
| 1982        | 455               |
| 1984        | 455*              |

Source: Alberta Municipal Affairs and (\*) Alberta Tourism and Small Business

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*Table 2**Village of Glendon Population Age and Sex Characteristics -- 1981*

| <u>Age Range</u> | <u>Males</u> | <u>Females</u> |
|------------------|--------------|----------------|
| 0-14             | 50           | 35             |
| 15-24            | 70           | 60             |
| 35-64            | 60           | 70             |
| 65 Plus          | 45           | 55             |
| Total            | 220          | 215            |

---

Source: Alberta Bureau of Statistics

Note: data are randomly rounded to end in "0" or "5".

ECONOMIC BASE AND LABOUR FORCE CHARACTERISTICS

In Glendon, the male population aged 15 years and older is 140, of which 75% are participating in the labour force; the female population in this age range is 150, and the labour force participation rate is 43%. Table 3 shows labour force activity by major occupational groups in 1981.

Table 3

*Village of Glendon Labour Force Activity  
by Major Occupational Groups -- 1981*

| <u>Occupational Group</u>                 | <u>Number</u> | <u>Percent of<br/>Labour Force</u> |
|-------------------------------------------|---------------|------------------------------------|
| <u>Males</u>                              |               |                                    |
| Machining, Product Fab., Assembly, Repair | 30            | 30.0                               |
| Transport Equipment Operating             | 20            | 20.0                               |
| Sales Occupations                         | 15            | 15.0                               |
| Other Occupations                         | 35            | 35.0                               |
| Total Labour Force                        | 100           |                                    |
| <u>Females</u>                            |               |                                    |
| Service Occupations                       | 20            | 30.8                               |
| Clerical and Related Occupations          | 20            | 30.8                               |
| Medicine and Health                       | 15            | 23.1                               |
| Other Occupations                         | 10            | 15.4                               |
| Total Labour Force                        | 65            |                                    |

Source: Alberta Bureau of Statistics

The major employers are the Co-op Farm Service Centre, Glendon Transport, Largie Transport, S&J Super A Grocery, Glendon Municipal Hospital, Glendon School, and the Canadian Imperial Bank of Commerce.

#### TOURIST ATTRACTIONS AND FACILITIES

The Village of Glendon is located in Alberta's Lakeland area and offers excellent outdoor tourist attractions. Hunting, fishing, boating and camping provide summer recreation, while winter sports include snowmobiling, cross-country skiing, and ice fishing. Popular fishing lakes are Bangs Lake (13 km south), Chicken Lake (19 km south), Kehewin Lake (29 km southeast), Minnie Lake (6 km northeast), Moose Lake (13 km east), Muriel Lake (34 km southeast), and the Beaver and Sands Rivers to the north.

Alberta Transportation and the Municipal District of Bonnyville have both developed overnight camp-grounds at Minnie Lake. The Village has a trailer park and a local campground with one-day parking. The Double G Motel (9 units) provides tourist accommodation.

PHYSICAL INFRASTRUCTURE

Roads

The main access roads to Glendon are Highway 28A and Secondary Road 882. The Village's internal roads are all oiled.

Railways

Canadian National provides freight service.

Airports

The nearest paved airstrip is near Bonnyville; the nearest commercial airport with scheduled flights is at CFB Cold Lake. There is a newly-developed grass strip 1 km east of Glendon.

Bus Service

Greyhound Bus Lines provides daily service to Cold Lake and Edmonton.

Utilities

Glendon has a fully-developed system of utilities. The Village completed a new sewage lagoon in 1982, has upgraded its water system and build a new storage tank. These facilities are designed to accommodate a population of 1500 and can be further expanded to provide for 3,000 people.

Schools

The Glendon School, under the jurisdiction of Lakeland Public School District, offere grades 1 to 12, and had enrolments of 500 in 1981-82. There is no day-care facility.

Recreation

Recreational facilities include a complex with three sheets of curling ice, skating rink (all ice artificial), and a hall; baseball diamonds; and a senior citizens' activity centre.

Health Facilities

Glendon has a newly-completed modern hospital with 10 beds and 1 doctor. The community is trying to attract another doctor. It also has a medical clinic, health unit and ambulance service.

Social Housing

None.

Fire Protection

The volunteer fire department has 16 volunteers and 2 trucks.

Police

The nearest R.C.M.P. detachment is in St. Paul.

Senior Citizens' Lodge

The Lodge has 14 units.

Banking

Canadian Imperial Bank of Commerce.

HOUSING AND BUILDING PERMITS

According to the 1981 Census, Glendon had then 180 private dwellings; the Village Office reports that there are now "a handful" of additional serviced lots. Some moves have been made to purchase a mobile home lot. There are now (Fall 1984) 2 licensed mobile homes and 1 duplex. In June 1984 the rental vacancy rate was 61%, but has since dropped to zero. Table 4 shows housing by type in 1981, and Table 5 shows data on building permits for 1982 to 1984.

---

Table 4

Village of Glendon Housing Characteristics -- 1981

|                                                 |     |
|-------------------------------------------------|-----|
| Total Number of Occupied Private Dwellings      | 180 |
| Detached Dwellings                              | 135 |
| Attached Dwellings                              | 20  |
| Apartments                                      | 5   |
| Duplexes                                        | 0   |
| Total Population in Private Households          | 420 |
| Average Number of Persons per Private Household | 2.4 |

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Source: Alberta Bureau of Statistics.

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Table 6

Village of Glendon  
Value of Building Permits -- 1982 to 1984  
(All Amounts in Thousands of Dollars)

|               | <u>New</u><br><u>Residential</u> | <u>Residential</u><br><u>Additions</u> | <u>Mobile</u><br><u>Homes</u> | <u>Other</u> | <u>Total</u> |
|---------------|----------------------------------|----------------------------------------|-------------------------------|--------------|--------------|
| 1982          | 124                              | --                                     | --                            | --           | 124          |
| 1983          | (2 permits)                      | (4 permits)                            | --                            | --           |              |
| 1984 (9 mos.) | 45                               | 11                                     | --                            | --           | 56           |

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Source: Alberta Tourism and Small Business, and Village of Glendon

#### CLUBS AND ORGANIZATIONS

References have been found to the following clubs and organizations.  
The list may not be up-to-date or complete.

Glendon Agricultural Society  
Glendon and District Senior Citizens' Club  
Kieves Kni Youth Camp  
Moose Lake Pentecostal Youth Camp

#### MUNICIPAL GOVERNMENT

The Village of Glendon was incorporated on January 1, 1957, and is governed by a mayor and 2 councillors. The administrative staff consists of a secretary-treasurer. The address is:

Village of Glendon,  
Box 177,  
Glendon, Alberta T0A 1P0  
Tel: (403) 635-3807

\*\*\*\*\*  
 \*  
 \* TOWN OF BONNYVILLE \*  
 \*  
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### INTRODUCTION

Bonnyville (1984 population 4,786) is the largest of the three towns in the Cold Lake area. It has a diversified economic base as a service centre (government and commercial) for agriculture, tourism and the oil and gas industry.

### POPULATION GROWTH AND CHARACTERISTICS

Table 1 shows the historical growth of the population of Bonnyville. From 1978 to 1984, the population grew by 1,651 persons, or over 50%, at an average rate of 7.5% per year. The years of highest growth (over 15% per year) were between 1978 and 1980. In 1984 the population was 50.2% male and 49.8% female.

Table 1

Town of Bonnyville Population -- 1971 to 1984

| <u>Year</u> | <u>Population</u> |
|-------------|-------------------|
| 1971        | 2,589             |
| 1976        | 2,861             |
| 1978        | 3,135             |
| 1979        | 3,699             |
| 1980        | 4,256             |
| 1981        | 4,369             |
| 1982        | 4,402             |
| 1983        | 4,664             |
| 1984        | 4,786             |

Source: Alberta Municipal Affairs

Table 2 shows the proportion of the population in different age groupings, for 1979, 1981 and 1984, and a comparison with the proportions typical of Alberta towns of comparable size in 1981.

Table 2

Town of Bonnyville Age Characteristics of Population -- 1979 to 1984  
Proportion of Population in Different Age Groups

| <u>Age Range</u> | <u>1979</u><br>(%) | <u>1981</u><br>(%) | <u>1984</u><br>(%) | <u>Alberta<br/>Towns Average*</u><br>(%) |
|------------------|--------------------|--------------------|--------------------|------------------------------------------|
| 0-14             | 29.5               | 30.5               | 27.9               | 27.3                                     |
| 15-34            | 35.0               | 36.4               | 38.7               | 37.7                                     |
| 35-64            | 22.8               | 21.4               | 22.2               | 24.4                                     |
| 65 Plus          | 12.7               | 11.1               | 10.9               | 11.6                                     |

\* 1981 Towns of population 2,500 to 5,000.

Source: Alberta Municipal Affairs

#### LENGTH OF RESIDENCE

Table 3 shows statistics on migration to Bonnyville for the population resident there in 1984.

Table 3

Town of Bonnyville Length of Residence -- 1984 Population  
Proportion Moving to Bonnyville at Different Times

| <u>Migration Characteristics</u>  | <u>Proportion</u><br>(%) |
|-----------------------------------|--------------------------|
| Born in Town -- Never Moved       | 18.9                     |
| -- Moved and Returned             | 3.3                      |
| Moved to Town -- Over 4 Years Ago | 43.9                     |
| -- 3 to 4 Years Ago               | 7.2                      |
| -- 2 to 3 Years Ago               | 7.0                      |
| -- 1 to 2 Years Ago               | 11.5                     |
| -- During the Past Year           | 8.2                      |

Source: Alberta Municipal Affairs

EMPLOYMENT AND LABOUR FORCE STATISTICS

Table 4 shows statistics on the labour force participation of the population in 1984, and comparisons with the proportions similarly engaged in the previous three years. Table 5 shows the locations where people were working, and Table 6 shows the percentage of the full-time and part-time workforces engaged in different sectors of the economy. Tables 4 and 5 exclude those working in town but living outside town.

Table 4

Town of Bonnyville Labour Force Participation -- 1981 to 1984

| <u>Employment Status</u> | <u>Percent of Population</u> |             |             | <u>1984</u>   |                |
|--------------------------|------------------------------|-------------|-------------|---------------|----------------|
|                          | <u>1981</u>                  | <u>1982</u> | <u>1983</u> | <u>Number</u> | <u>Percent</u> |
| Full Time                | 33.4                         | 30.1        | 30.7        | 1,588         | 33.6           |
| Part Time                | 3.1                          | 4.4         | 4.5         | 217           | 4.6            |
| At Home                  | 10.7                         | 13.5        | 12.0        | 468           | 9.9            |
| Unemployed, Seeking Work | 2.4                          | 4.8         | 6.0         | 265           | 5.6            |
| Student or Pre-School    | 36.6                         | 35.6        | 35.3        | 590           | 33.6           |
| Retired                  | 12.8                         | 8.7         | 10.8        | 582           | 11.9           |
| Other                    | 1.0                          | 1.9         | 1.8         | 42            | 0.9            |
| No Response              |                              |             |             | 54            |                |
| Total Population         |                              |             |             | 4,796         |                |

Source: Alberta Municipal Affairs

Table 5

Town of Bonnyville Places of Work of Employed People -- 1984  
(Percent of Full-Time and Part-Time Employees)

| <u>Location of Work</u> | <u>Percent</u> |
|-------------------------|----------------|
| Bonnyville              | 81.1           |
| Cold Lake               | 0.7            |
| Grand Centre            | 0.9            |
| C.F.B. Cold Lake        | 1.2            |
| Surrounding Rural Area  | 11.2           |

Source: Alberta Municipal Affairs

Table 6

*Town of Bonnyville Labour Force Activity by Major Occupational Groups  
1980 to 1984  
Percentage of Full-Time and Part-Time Workers in Each Group*

| <u>Sector</u>         | <u>1980</u><br>(%) | <u>1981</u><br>(%) | <u>1982</u><br>(%) | <u>1983</u><br>(%) | <u>1984</u><br>(%) |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Retail Trade          | 18.7               | 18.6               | 15.8               | 15.4               | 12.8               |
| Mining, Oil and Gas   | 6.5                | 6.1                | 7.2                | 7.8                | 12.7               |
| Construction          | 19.5               | 16.0               | 12.7               | 12.0               | 12.3               |
| Educational Services  | 7.9                | 8.5                | 10.5               | 10.0               | 9.5                |
| Government and D.N.D. | 10.7               | 11.2               | 12.1               | 12.0               | 9.4                |

Source: Alberta Municipal Affairs

#### HOUSING AND BUILDING PERMITS

Table 7 shows the growth in the number of dwelling units in the Town of Bonnyville since 1978. The absolute increase is 521, and the percentage increase is 48.1%. Table 8 shows the types of dwellings in the Town, with statistics on occupancy. Finally, Table 9 shows the value of building permits during the past three years (1982 to 1984).

The Department of Municipal Affairs reports that the number of vacant housing units has declined steadily from 217 in 1981 to 66 in 1984. The Town Office estimates that in November 1984 the vacancy rate in rental accommodation is zero, down from 7% in June. It appears that characteristics of occupancy are changing significantly, with steady declines being observed both in the proportion of owner-occupied dwellings (from 67% to 54% since 1978), and in the average number of persons per dwelling unit (from 3.3 to 2.8 since 1979).

Bonnyville has a system of land banking, and now (late 1984) has an inventory of 67 serviced lots. The number of privately-owned vacant serviced lots is estimated at about 100.

Table 7

Town of Bonnyville Number of Dwelling Units -- 1979 to 1984

| <u>Year</u> | <u>Number of Dwellings</u> |
|-------------|----------------------------|
| 1979        | 1,212                      |
| 1981        | 1,623                      |
| 1982        | 1,686                      |
| 1983        | 1,697                      |
| 1984        | 1,733                      |

Source: Alberta Municipal Affairs

Table 8

Town of Bonnyville Housing Characteristics -- June 1984

|                      | <u>Number<br/>of<br/>Units</u> | <u>% of<br/>Total<br/>Dwellings</u> | <u>No. of<br/>Vacant<br/>Units</u> | <u>% Pop'n<br/>Living<br/>in Units</u> | <u>Persons<br/>per<br/>Unit</u> |
|----------------------|--------------------------------|-------------------------------------|------------------------------------|----------------------------------------|---------------------------------|
| Single Detached      | 1,081                          | 62.3                                | 46                                 | 66.3                                   | 3.1                             |
| Suites               | 25                             | 1.4                                 | 1                                  | 0.6                                    | 1.6                             |
| Duplex               | 104                            | 6.0                                 | 5                                  | 7.1                                    | 3.4                             |
| Row Housing          | 59                             | 3.4                                 | 0                                  | 2.7                                    | 2.2                             |
| Apartments           | 348                            | 20.0                                | 11                                 | 13.1                                   | 1.8                             |
| Mobile Homes         | 118                            | 6.8                                 | 3                                  | 7.6                                    | 3.1                             |
| Institutional/Motels |                                |                                     |                                    | 2.4                                    |                                 |
| Total                | 1,735                          |                                     |                                    |                                        |                                 |

Source: Alberta Municipal Affairs

Table 9

Town of Bonnyville Value of Building Permits 1982 to 1984  
(Values in Thousands of Dollars)

|      | <u>Residential</u> | <u>Commercial</u> | <u>Industrial</u> | <u>Instit-<br/>tutional</u> | <u>Total</u> |
|------|--------------------|-------------------|-------------------|-----------------------------|--------------|
| 1982 | 770                | 113               | 175               | 480                         | 1,538        |
| 1983 | 762                | 397               | --                | 1,952                       | 3,112        |
| 1984 | 3,765              | 1,544             | --                | 16,200 <sup>a</sup>         | 21,507       |

<sup>a</sup> The Institutional totals for 1983 and 1984 reflect phases I and II of the new hospital.

Source: Alberta Tourism and Small Business

#### EDUCATIONAL FACILITIES

Bonnyville has 3 elementary schools, 3 junior high schools, 1 high school, and 1 vocational institution, which is Lakeland College. The College has no permanent campus facility in the Town. A new school is being built for grades K to 9.

Three day care centres are in operation: 1 French, 1 English and 1 Ukrainian. Townspeople are trying to procure free land from the Town on which to build a children's centre, or to have a centre in the new school.

#### HEALTH FACILITIES

The two present hospitals (total 76 beds) will close in late 1985, when the new facility will open. It will have 65 active treatment beds, and 20 auxiliary beds. There are 3 medical clinics, a health unit, and a nursing home. The Town has 5 doctors, 4 dentists and an ambulance service. There is a senior citizens' lodge, and three complexes of self-contained apartments.

#### RECREATION FACILITIES

Recreation facilities in Town include:

- arena
- curling rink
- senior citizens' drop-in centre
- public library
- toy library
- auditorium
- tennis courts

ball diamonds  
mini-golf course  
swimming pool

Outside town, but nearby, are:

rodeo grounds  
golf course  
ski hill

A man-made pond in Town is stocked, and may be fished by people under the age of 16, or over the age of 65. There is a developed lakeshore in Town with a camping area, play park, jogging and fitness areas, and over-night camping. Moose Lake and Muriel Lake offer parks, camp grounds and other forms of outdoor recreation.

COMMUNITY CLUBS AND ORGANIZATIONS

References have been found to the following clubs and organizations; the list may not be complete.

Sports

hockey (various levels)  
baseball (various levels)  
swimming club (adults and children)  
volleyball club  
basketball club  
badminton club  
cross-country ski club  
Beaver Valley Ski Club  
golf and country club  
ringette club  
shooting club  
soccer club (various levels)  
curling

Cultural/Arts/Crafts

pottery club  
fine arts society (theatre group)  
school of dance  
French folk dance  
Ukrainian folk dance  
Métis dance club  
Bonnyville Historical Society

Service Clubs and Church Organizations

Kinsmen/Kinettes  
Lions/Lionettes  
Knights of Columbus  
Canadian Legion

Youth Clubs

Scouts/Cubs/Guides/Brownies (French and English)  
Kiddies Kormer Playschool (French, English and Ukrainian)  
4-H Club

Other

seniors' drop-in centre  
parks and recreation programs  
further education courses  
Big Brothers and Big Sisters  
Dove Centre (vocational training for handicapped people)

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\*  
\* TOWN OF COLD LAKE \*  
\*  
\*\*\*\*\*

HISTORICAL SYNOPSIS

In 1885 the Edmonton Bulletin newspaper carried the following report on an expedition to the Cold Lake area:

"The men on the expedition to the Beaver River spoke very highly of the country where the Chipewyan reserve is situated. It is a beautiful locality containing quite a large tract of rolling, open prairie. The soil is very rich; the streams and lakes abound in excellent fish..."

The Chipewyan Indians first named Cold Lake, "Big Fish Lake", while early fur traders called in, "Cold Water Lake". Both the Hudson's Bay Company and the North-West Company built trading posts by the Beaver River, an important trading route to the south of the Lake. In 1905, Cold Lake received its present name.

The Hudson's Bay Company operated a trading post at Cold Lake until 1950. Shortly thereafter the Canadian Forces Base was established.

POPULATION CHARACTERISTICS

Table 1 shows the historical growth of the population of Cold Lake. From 1978 to 1984 the population grew by an estimated 1,115 persons, an average annual growth rate of 10.5%. The years of highest growth were 1978/79 (13%), 1980/81 (25%), and 1983/84 (12%).

Table 1

Town of Cold Lake Population -- 1961 to 1984

| <u>Year</u> | <u>Population</u>      |
|-------------|------------------------|
| 1961        | 1,307                  |
| 1966        | 1,289                  |
| 1971        | 1,314                  |
| 1976        | 1,303                  |
| 1977        | 1,317                  |
| 1978        | 1,400 (Est. No Census) |
| 1979        | 1,585                  |
| 1980        | 1,648                  |
| 1981        | 2,054                  |
| 1982        | 2,069                  |
| 1983        | 2,245                  |
| 1984        | 2,515                  |

Source: Alberta Municipal Affairs

Table 2 shows the proportion of the population in different age groupings, for 1979, 1981 and 1984, and a comparison with the proportions typical of Alberta towns of comparable size in 1981.

Table 2

Town of Cold Lake Age Characteristics of Population -- 1979 to 1984  
Proportion of Population in Different Age Groups

| <u>Age Range</u> | <u>1979</u><br>(%) | <u>1981</u><br>(%) | <u>1984</u><br>(%) | <u>Alberta</u><br><u>Towns Average*</u><br>(%) |
|------------------|--------------------|--------------------|--------------------|------------------------------------------------|
| 0-14             | 29.4               | 29.7               | 27.5               | 27.3                                           |
| 15-34            | 38.7               | 39.7               | 40.7               | 37.7                                           |
| 35-64            | 24.2               | 24.0               | 26.0               | 24.4                                           |
| 65 Plus          | 7.9                | 6.6                | 6.0                | 11.6                                           |

\* 1981 Towns of population 2,500 to 5,000.

Source: Alberta Municipal Affairs

LENGTH OF RESIDENCE

Table 3 shows statistics on migration to Cold Lake for the population resident there in 1984.

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Table 3

Town of Cold Lake Length of Residence -- 1984 Population  
Proportion Moving to Cold Lake at Different Times

| <u>Migration Characteristics</u>  | <u>Proportion (%)</u> |
|-----------------------------------|-----------------------|
| Born in Town -- Never Moved       | 16.6                  |
| -- Moved and Returned             | 2.4                   |
| Moved to Town -- Over 4 Years Ago | 37.6                  |
| -- 3 to 4 Years Ago               | 7.2                   |
| -- 2 to 3 Years Ago               | 9.1                   |
| -- 1 to 2 Years Ago               | 15.7                  |
| -- During the Past Year           | 11.4                  |

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Source: Alberta Municipal Affairs

EMPLOYMENT AND LABOUR FORCE STATISTICS

Table 4 shows statistics on the labour force participation of the population in 1984, and comparisons with the proportions similarly engaged in the previous three years. Table 5 shows the locations where people were working, and Table 6 shows the percentage of the full-time and part-time workforces engaged in different sectors of the economy. Tables 4 and 5 exclude those working in town but living outside town.

Table 4

## Town of Cold Lake Labour Force Participation -- 1981 to 1984

| <u>Employment Status</u> | <u>Percent of Population</u> |             |             | <u>1984</u>   |                |
|--------------------------|------------------------------|-------------|-------------|---------------|----------------|
|                          | <u>1981</u>                  | <u>1982</u> | <u>1983</u> | <u>Number</u> | <u>Percent</u> |
| Full Time                | 39.0                         | 36.6        | 38.1        | 1,013         | 40.3           |
| Part Time                | 4.0                          | 5.2         | 4.3         | 148           | 5.9            |
| At Home                  | 10.5                         | 10.2        | 10.3        | 217           | 8.6            |
| Unemployed, Seeking Work | 4.8                          | 5.0         | 5.2         | 106           | 4.2            |
| Student or Pre-School    | 34.6                         | 35.2        | 34.2        | 798           | 31.7           |
| Retired                  | 7.0                          | 7.3         | 7.0         | 178           | 7.1            |
| Other                    | 0.1                          | 0.5         | 0.3         | 19            | 0.8            |
| No Response              |                              |             |             | 36            |                |
| Total Population         |                              |             |             | 2,515         |                |

Source: Alberta Municipal Affairs

Table 5

Town of Cold Lake Places of Work of Employed People -- 1984  
(Percent of Full-Time and Part-Time Employees)

| <u>Location of Work</u> | <u>Percent</u> |
|-------------------------|----------------|
| Bonnyville              | 1.1            |
| Cold Lake               | 29.0           |
| Grand Centre            | 26.6           |
| C.F.B. Cold Lake        | 32.2           |
| Surrounding Rural Area  | 9.6            |

Source: Alberta Municipal Affairs

Table 6

*Town of Cold Lake Labour Force Activity by Major Occupational Groups  
1980 to 1984  
Percentage of Full-Time and Part-Time Workers in Each Group*

| <u>Sector</u>         | <u>1980</u><br>(%) | <u>1981</u><br>(%) | <u>1982</u><br>(%) | <u>1983</u><br>(%) | <u>1984</u><br>(%) |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Government and D.N.D. | 26.4               | 26.8               | 32.2               | 33.9               | 32.0               |
| Mining, Oil and Gas   | 4.2                | 6.5                | 9.2                | 6.5                | 11.7               |
| Educational Services  | 8.7                | 7.7                | 8.3                | 9.8                | 9.2                |
| Construction          | 12.1               | 9.5                | 8.4                | 6.4                | 8.1                |
| Retail Trade          | 11.5               | 11.5               | 10.6               | 11.5               | 6.4                |

Source: Alberta Municipal Affairs

#### HOUSING AND BUILDING PERMITS

Table 7 shows the growth in the number of dwelling units in the Town of Cold Lake since 1979. The absolute increase is 345, and the percentage increase is 65.7%. Table 8 shows the types of dwellings in the Town, with statistics on occupancy. Finally, Table 9 shows the value of building permits during the past four years (1981 to 1984).

The Department of Municipal Affairs reports that the number of vacant housing units has declined steadily from 166 in 1981 to 43 in 1984. It appears that characteristics of occupancy are changing to a moderate extent, with slight declines being observed both in the proportion of owner-occupied dwellings (from 68% to 63% since 1979), and in the average number of persons per dwelling unit (from 3.3 to 3.0 since 1979).

The Town Office estimates that the rental vacancy rate, which had been 5% in June of 1984, had decreased to 0% by November. The number of housing starts this year is 71, and a 27-suite apartment is being built. A 36-unit row housing development and a 20-suite apartment are due to be constructed soon. Cold Lake has over 350 serviced lots available.

Table 7

*Town of Cold Lake Number of Dwelling Units -- 1979 to 1984*

| <u>Year</u> | <u>Number of Dwellings</u> |
|-------------|----------------------------|
| 1979        | 525                        |
| 1981        | 794                        |
| 1982        | 808                        |
| 1983        | 820                        |
| 1984        | 870                        |

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*Source: Alberta Municipal Affairs*

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Table 8

*Town of Cold Lake Housing Characteristics -- June 1984*

|                      | <u>Number<br/>of<br/>Units</u> | <u>% of<br/>Total<br/>Dwellings</u> | <u>No. of<br/>Vacant<br/>Units</u> | <u>% Pop'n<br/>Living<br/>in Units</u> | <u>Persons<br/>per<br/>Unit</u> |
|----------------------|--------------------------------|-------------------------------------|------------------------------------|----------------------------------------|---------------------------------|
| Single Detached      | 664                            | 75.0                                | 25                                 | 78.1                                   | 3.2                             |
| Suites               | 15                             | 1.7                                 | 3                                  | 1.1                                    | 2.4                             |
| Duplex               | 74                             | 8.3                                 | 6                                  | 8.0                                    | 2.9                             |
| Row Housing          | 33                             | 3.7                                 | 1                                  | 2.6                                    | 2.0                             |
| Apartments           | 81                             | 9.1                                 | 4                                  | 5.6                                    | 1.6                             |
| Mobile Homes         | 17                             | 1.9                                 | 4                                  | 1.6                                    | 3.0                             |
| Institutional/Motels |                                |                                     |                                    | 2.0                                    |                                 |
| Total                | 1,735                          |                                     |                                    |                                        |                                 |

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*Source: Alberta Municipal Affairs*

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Table 9

Town of Cold Lake Value of Building Permits 1982 to 1984  
(Values in Thousands of Dollars)

|                   | <u>1981</u> | <u>1982</u> | <u>1983</u> | <u>1984</u> * |
|-------------------|-------------|-------------|-------------|---------------|
| Single Family     | 1,110       | 647         | 1,289       | 8,181         |
| Other Residential | 1,030       | 947         | 172         | 96            |
| Other             | 752         | 4,020       | 1,064       | **18,039      |

\* January to October

\*\* New hospital.

Source:

#### PHYSICAL INFRASTRUCTURE

##### Roads

The main access roads, Highways 28 and 55, are paved. Internal roads in the Town of Cold Lake are 70% paved and 30% gravelled.

##### Railways

There is no rail service to the Town of Cold Lake. The closest is the CNR at Grand Centre.

##### Airports

The Town is served by the Cold Lake/Grand Centre Municipal Airport, located 2 km west of Cold Lake. Commercial air services use the Canadian Forces Base facilities and the Alberta Transportation terminal building. Daily air service is provided by Southern Frontier Air.

##### Bus Services

Greyhound Bus Lines offers passenger and freight services three times daily southeast to St. Paul, Smoky Lake and Edmonton.

##### Utilities

All modern utility services are available in Cold Lake.

Schools

Lakeland R.C. School District operates St. Dominic's School which provides grades K to 6 for Catholic students from Cold Lake and Grand Centre. Grades 7 to 12 are in Grand Centre at the Assumption School.

Lakeland Public School District has two schools in Cold Lake. Cold Lake Elementary has grades K to 3, and the new Nelson Heights School has grades 4 to 9. High school students are sent to Grand Centre.

Other educational services are Lakeland College, which has programs but no permanent campus facility in Cold Lake, and a playschool.

Health Care

Cold Lake now (1984) has a hospital with 40 beds. A new hospital with 100 beds (and potential for 80 more) including 15 auxiliary beds. There are 4 doctors and 2 surgeons, a medical clinic and a Health Unit office. Other medical services are provided by a chiropractor, 3 dentists and an ambulance service. Cold Lake has a nursing home and a Senior Citizens' Lodge for 64 residents. CFB Cold Lake provides a limited amount of access to Base dentists and medical specialists.

Recreation Facilities

Recreation facilities include:

- arena
- curling rink
- 2 tennis courts
- 4 ball diamonds
- soccer field
- football field
- senior citizens' drop-in centre
- public library
- toy library

Community members can use the public school facilities which include 2 courts for raquetball and squash, an amphitheatre and a gymnasium. In addition, there are nearby campgrounds, parks and beaches at Kinosoo Park, Cold Lake Provincial Park, and the M.D. Park, as well as at many other lake areas. There is no swimming pool, but CFB Cold Lake allows limited access to the Base pool and golf course. While Cold Lake Provincial Park is developed, the community would like it further developed, and more programming for all ages and seasons. There is a ski hill at Kinosoo Ridge, Frenchman's Bay.

CLUBS AND ORGANIZATIONS

Because so many clubs and organizations serve the three communities of Cold Lake, Grand Centre and Medley, they are listed in a separate section following the profile of the Canadian Forces Base Cold Lake.

\*\*\*\*\*  
 \*  
 \* THE TOWN OF GRAND CENTRE \*  
 \*  
 \*\*\*\*\*

POPULATION CHARACTERISTICS

Table 1 shows the historical growth of the population of Grand Centre. From 1978 to 1984 the population grew by 415 persons, an average annual growth rate of 2.6%. The year of highest growth was 1979/80 (10%). In June 1984, 53% of the population was male.

Table 1

Town of Grand Centre Population -- 1971 to 1984

| <u>Year</u> | <u>Population</u> |
|-------------|-------------------|
| 1971        | 2,166             |
| 1976        | 2,751             |
| 1978        | 2,780             |
| 1979        | 2,830             |
| 1980        | 3,107             |
| 1981        | 3,174             |
| 1983        | 3,119             |
| 1984        | 3,195             |

Source: Alberta Municipal Affairs

Table 2 shows the proportion of the population in different age groupings, for 1979, 1981 and 1984, and a comparison with the proportions typical of Alberta towns of comparable size in 1981.

Table 2

*Town of Grand Centre Age Characteristics of Population -- 1979 to 1984  
Proportion of Population in Different Age Groups*

| <u>Age Range</u> | <u>1979</u> | <u>1981</u> | <u>1984</u> | <u>Alberta<br/>Towns Average*</u> |
|------------------|-------------|-------------|-------------|-----------------------------------|
|                  | (%)         | (%)         | (%)         | (%)                               |
| 0-14             | 28.4        | 28.3        | 23.8        | 27.3                              |
| 15-34            | 39.4        | 39.5        | 42.1        | 37.7                              |
| 35-64            | 29.1        | 28.5        | 30.6        | 24.4                              |
| 65 Plus          | 3.9         | 3.6         | 3.3         | 11.6                              |

\* 1981 Towns of population 2,500 to 5,000.

Source: Alberta Municipal Affairs

#### LENGTH OF RESIDENCE

Table 3 shows statistics on migration to Grand Centre for the population resident there in 1984.

Table 3

*Town of Grand Centre Length of Residence -- 1984 Population  
Proportion Moving to Grand Centre at Different Times*

| <u>Migration Characteristics</u>  | <u>Proportion</u> |
|-----------------------------------|-------------------|
|                                   | (%)               |
| Born in Town -- Never Moved       | 16.3              |
| -- Moved and Returned             | 1.4               |
| Moved to Town -- Over 4 Years Ago | 51.1              |
| -- 3 to 4 Years Ago               | 6.5               |
| -- 2 to 3 Years Ago               | 7.3               |
| -- 1 to 2 Years Ago               | 10.5              |
| -- During the Past Year           | 6.9               |

Source: Alberta Municipal Affairs

EMPLOYMENT AND LABOUR FORCE STATISTICS

Table 4 shows statistics on the labour force participation of the population in 1984, and comparisons with the proportions similarly engaged in 1981 and 1983. The Town of Grand Centre did not conduct a census in 1982. Table 5 shows the locations where people were working, and Table 6 shows the percentage of the full-time and part-time workforces engaged in different sectors of the economy. Tables 4 and 5 exclude those working in town but living outside town.

Table 4

Town of Grand Centre Labour Force Participation -- 1981 to 1984

| <u>Employment Status</u> | <u>Percent of Population</u> |             | <u>1984</u>   |                |
|--------------------------|------------------------------|-------------|---------------|----------------|
|                          | <u>1981</u>                  | <u>1983</u> | <u>Number</u> | <u>Percent</u> |
| Full Time                | 43.0                         | 41.5        | 1,433         | 47.5           |
| Part Time                | 3.4                          | 4.3         | 123           | 4.1            |
| At Home                  | 9.6                          | 8.6         | 268           | 8.6            |
| Unemployed, Seeking Work | 3.5                          | 6.8         | 136           | 4.6            |
| Student or Pre-School    | 36.1                         | 33.4        | 902           | 29.9           |
| Retired                  | 4.2                          | 4.0         | 142           | 4.7            |
| Other                    | 0.2                          | 2.5         | 12            | 0.4            |
| No Response              |                              |             | 177           |                |
| Total Population         |                              |             | 3,195         |                |

Source: Alberta Municipal Affairs

Table 5

Town of Grand Centre Places of Work of Employed People -- 1984  
(Percent of Full-Time and Part-Time Employees)

| <u>Location of Work</u> | <u>Percent</u> |
|-------------------------|----------------|
| Bonnyville              | 1.4            |
| Cold Lake               | 3.3            |
| Grand Centre            | 49.5           |
| C.F.B. Cold Lake        | 39.9           |
| Surrounding Rural Area  | 3.8            |

Source: Alberta Municipal Affairs

Table 6

*Town of Grand Centre Labour Force Activity by Major Occupational Groups  
1980 to 1984  
Percentage of Full-Time and Part-Time Workers in Each Group*

| <u>Sector</u>          | <u>1980</u><br>(%) | <u>1981</u><br>(%) | <u>1983</u><br>(%) | <u>1984</u><br>(%) |
|------------------------|--------------------|--------------------|--------------------|--------------------|
| Government and D.N.D.  | 33.7               | 34.6               | 39.5               | 38.7               |
| Accommodation and Food | 7.6                | 8.3                | 8.2                | 8.1                |
| Construction           | 12.1               | 9.8                | 6.5                | 7.6                |
| Retail Trade           | 12.7               | 10.0               | 12.7               | 6.7                |
| Mining, Oil and Gas    | 4.5                | 6.0                | 5.8                | 6.2                |
| Educational Services   | 6.1                | 7.8                | 6.8                | 6.1                |

Source: Alberta Municipal Affairs

#### HOUSING AND BUILDING PERMITS

Table 7 shows the growth in the number of dwelling units in the Town of Grand Centre since 1979. The absolute increase is 216, and the percentage increase is 22.8. Table 8 shows the types of dwellings in the Town, with statistics on occupancy. Finally, Table 9 shows the value of building permits during the last four years (1981 to 1984).

The Department of Municipal Affairs reports that the number of vacant housing units has declined steadily from 115 in 1981 to 45 in 1984. It appears that characteristics of occupancy are changing to a moderate extent, with slight declines being observed both in the proportion of owner-occupied dwellings (from 68% to 61% since 1979), and in the average number of persons per dwelling unit (from 3.2 to 2.8 since 1979).

In June 1984 Alberta Tourism and Small Business reported a rental vacancy rate of 1.2%. A new 49-suite apartment building is under construction. The Town has "a large supply" (500?) of serviced lots.

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Table 7

Town of Grand Centre Number of Dwelling Units -- 1979 to 1984

| <u>Year</u> | <u>Number of Dwellings</u> |
|-------------|----------------------------|
| 1979        | 958                        |
| 1981        | 1,123                      |
| 1983        | 1,122                      |
| 1984        | 1,176                      |

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Source: Alberta Municipal Affairs

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Table 8

Town of Grand Centre Housing Characteristics -- June 1984

|                      | <u>Number<br/>of<br/>Units</u> | <u>% of<br/>Total<br/>Dwellings</u> | <u>No. of<br/>Vacant<br/>Units</u> | <u>% Pop'n<br/>Living<br/>in Units</u> | <u>Persons<br/>per<br/>Unit</u> |
|----------------------|--------------------------------|-------------------------------------|------------------------------------|----------------------------------------|---------------------------------|
| Single Detached      | 726                            | 62.1                                | 30                                 | 66.9                                   | 3.2                             |
| Suites               | 31                             | 2.6                                 | 0                                  | 1.3                                    | 2.0                             |
| Duplex               | 22                             | 1.8                                 | 3                                  | 1.8                                    | 2.9                             |
| Row Housing          | 52                             | 4.3                                 | 1                                  | 4.2                                    | 2.6                             |
| Apartments           | 163                            | 14.0                                | 3                                  | 8.4                                    | 1.7                             |
| Mobile Homes         | 175                            | 15.1                                | 8                                  | 14.2                                   | 2.7                             |
| Institutional/Motels |                                |                                     |                                    | 0.5                                    |                                 |
| Total                | 1,735                          |                                     |                                    |                                        |                                 |

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Source: Alberta Municipal Affairs

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Table 9

Town of Grand Centre Value of Building Permits 1982 to 1984  
(Values in Thousands of Dollars)

|                   | <u>1981</u> | <u>1982</u> | <u>1983</u> | <u>1984*</u> |
|-------------------|-------------|-------------|-------------|--------------|
| Single Family     | 459         | 366         | 452         | 941          |
| Other Residential | 375         | 78          | 55          | 1,186        |
| Other             | 5,289       | 1,040       | 190         | 310          |

\* January to September

Source:

#### PHYSICAL INFRASTRUCTURE

##### Schools

Lakeland Roman Catholic School District operates the Assumption School, providing grades 7 to 12 for students from both Grand Centre and Cold Lake. Lakeland Public School District operates Grand Centre Elementary (grades K to 6), Grand Centre Junior High (grades 7 to 9) and Grand Centre High School (grades 10 to 12).

Other educational (or related) facilities or services are Lakeland College, a playschool and a day care centre, which is reported to have a waiting list.

##### Medical Services

Hospital facilities for Grand Centre are and will be located in Cold Lake, where a new hospital is under construction. Grand Centre has 4 doctors (in 2 clinics), 4 dentists, a chiropractor, and a health unit office. Nursing home facilities are in Cold Lake; Grand Centre has a 12-unit senior citizens' lodge.

##### Recreation Facilities

The Leisure Sports Village is a recreation complex that includes a banquet hall, racket courts, an arena, curling rink, 5 tennis courts, baseball diamonds and a senior citizens' drop-in centre. Grand Centre also has a library, friendship centre, the Lions Park with Picnic facilities, and the regional facilities that are described in the Cold Lake profile.

Police

*The R.C.M.P. has a 21-member detachment; the Town employs a by-law enforcement officer.*

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\* CANADIAN FORCES BASE COLD LAKE \*  
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The Canadian Forces Base is located at Medley, 3 km west of Grand Centre in the Municipal District of Bonnyville. The Base had a population of 5,335 in 1980, 6,700 in 1982, and with 1,251 military personnel, is estimated to have over 6,000 residents in November 1984. The Base was established as a facility for military aircraft using the Primrose Lake Air Weapons Range. The Base is regularly used for N.A.T.O. exercises.

The Base is a self-contained community, but a number of employees and their families live in surrounding communities, mainly Grand Centre and Cold Lake. Housing on the Base consists of single-family units and duplexes. There are no plans to expand housing on the Base. Base personnel will increase by 400 to 500 employees within the next 2 to 3 years, but housing will be contracted for in Grand Centre and Cold Lake. The initial phase of expansion calls for construction of 100 units.

The Base has its own newspaper (the Courier) and radio station (CHCL).

Facilities on the Base include 4 schools (offering elementary and junior high grades), a public library, golf course, swimming pool, skating rink, gym, racquet ball courts, ball diamonds, soccer and football fields. Only the library is freely available to the civilian community; there is limited access to the pool and golf course.

Medical services are provided by 12 doctors, 5 medical specialists, 6 dentists and an orthodontist, all of whom also serve the civilian community in off-base locations.

Residents of the Base participate in clubs and organizations in Grande Centre and Cold Lake (see listing in the next section). In addition, the following activities are available only to Base personnel and their families:

Sports

hockey  
soccer  
baseball  
figure skating  
basketball  
gun club -- rifle and pistol  
curling  
Palm Springs Golf Club  
gymnastics club  
motor cycle club  
scuba diving  
soaring

Sports (continued)

tennis  
volleyball  
Medley Marlins (swimming)  
downhill skiing  
Medley Skeet and Trap Club  
judo club

Cultural, Arts and Crafts

ceramics  
lapidary  
brass band  
pipe band  
wood hobby shop  
auto hobby shop  
garden club  
amateur radio club  
Beta Sigma Phi (Alpha Beta Medley)

Youth

Medley Teen Club  
Guides, Brownies, Scouts, Cubs  
Mary Poppins Playschool

SUPPLEMENT: CLUBS AND ORGANIZATIONS FOR COLD LAKE, GRAND CENTRE AND MEDLEY

References have been found to the following clubs and organizations serving the three communities. The list may not be up-to-date or complete.

Sports

hockey (various levels)  
soccer (various levels)  
fitness aerobics (ladies)  
baseball (various levels)  
figure skating  
Cold Lake District Sportsmen Fish and Game Association  
Airway Racing Association (cars)  
badminton  
basketball  
curling  
Grand Centre Golf Club  
Lakeland Gymnastics Club  
Kinosoo Paddlers  
Lakeland Road Riders (motorcycles)  
roller skating  
sailing  
Grand Centre Snowmobile Club  
squash  
Kinosoo Swimmers  
tennis  
volleyball  
wrestling  
yoga  
downhill skiing  
cross-country skiing

Cultural/Arts/Crafts

Satellite Friendship Centre  
arts and crafts  
art society  
Cold Lake Aqua Days Committee  
Cold Lake Historical Society  
Cold Lake Artisan's Guild  
ceramics  
film society  
Kinosoo Performing Arts Society  
macrame  
pottery  
Ukrainian egg decorating  
square dancing  
ballroom dancing  
bridge

Service Clubs and Church Organizations

*Knights of Columbus*  
*Lions*  
*Legion and Ladies Auxiliary*  
*Toastmasters*  
*Anglican Guild of St. Margaret*  
*Catholic Women's League*  
*Oil Wives Club*  
*A-Quest (school and parents)*  
*Canadian Catholic Development and Peace*

\*\*\*\*\*  
\*  
\* ELIZABETH METIS SETTLEMENT \*  
\*  
\*\*\*\*\*

The following is a brief up-date of the material contained in the N.A.D.C. profile. Further information can be obtained there.

In 1983 the total registered Settlement population was 504, although only 417 were living there when the census was taken. Houses are scattered throughout the Settlement, with services being concentrated in the hamlet area, which has the school, church, hall, 3 teacherages, and a school lunch room. There are now 70 households outside the hamlet area and 10 within it. In 1985 houses in the hamlet will be hooked up for running water.

A housing officer coordinates construction of houses allocated each year by Alberta Housing. A joint venture by Canada Manpower and the Settlement trains carpenters through the house-building program.

The furniture factory, which closed in 1982, has not been re-opened. The machinery has been turned over to the Housing Association and is used in the house-building program.

Lakeland Roman Catholic School District operates the school, which offers grades 1 to 7, and had 1984 enrolments of 101. The building is used as a community facility for volleyball and other recreational activities. The basement of the community hall is used for up-grading classes for adults up to grade 12.

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\*        KEHEWIN AND COLD LAKE INDIAN RESERVES        \*  
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The N.A.D.C. community profiles deal with Kehewin, but not Cold Lake. For purposes of this Discussion Paper, telephone calls were made to the Reserves to up-date the Kehewin profile, and to obtain some preliminary information about the Cold Lake Reserve. Some statistics were also examined (1981 Census of Canada and the Department of Indian Affairs), but as usual, because of confusion between band-list and census information and because of migration, these may not be accurate, and certainly require special interpretation. They are not presented here.

The Department of Indian Affairs gives population estimates of 883 for Kehewin and 1,076 for Cold Lake in 1984. Since the census totals for 1981 were 580 and 570, respectively, the 1984 estimates must come from band lists. It would appear that the combined resident populations of the reserves must be approximately 1,200 to 1,300 people.

KEHEWIN

Most of the information in the N.A.D.C profile is still valid. The following changes and additions should be made:

The school now provides grades K to 9. The school now has 7 classrooms; In 1984 3 classrooms, and a gymnasium to replace the multiplex gymnasium, were added. High school students continue to travel to Bonnyville.

A residential subdivision is being developed in the core area of the Reserve, and the Band would like to build a trailer court. The subdivision will have a piped water and sewer system and a new lagoon. A new Band office is being built.

There are now about 125 houses, including 5 built in 1984. There are 6 trailers in the present site, and an additional 5 scattered throughout the Reserve.

COLD LAKE

The Cold Lake Reserve is made up of three pieces of land: a small area (149A) just east of the Town of Cold Lake, a larger area (149B, approximately 16 square miles) on the lakeshore just north of the Town, and the largest area (149, approximately 55 square miles) just south of the Town of Grand Centre.

There are now about 150 dwellings, of which 28 are trailers. Dwellings are scattered throughout the area, with a central core where the school and other facilities are located.

The school provides grades K to 9, and has approximately 100 students. The gymnasium, skating rink and the carpenter's shop are used as community facilities. Sports groups are organized from time to time.

The Tribal Administration has its own construction company which employs band members in road construction and oilfield work, and operates Apex Truss using the carpenter's shop. Other residents are employed by the Administration, and some work at C.F.B. Cold Lake.

Water is trucked to houses from a central pump house, and septic tanks are used. The Band is in the process of obtaining a fire hall and truck, and is organizing a volunteer fire department. Police services come from the Grand Centre R.C.M.P.

A public health nurse works on the Reserve, and will be accommodated in a new facility in 1985.

CONCLUSION TO SECTION II

The convention adopted in Section II, where contributions from Carcajou were placed in italics, and contributions from the N.A.D.C. profiles were placed in normal type, will now be abandoned. Material in sections III, IV, and V is all the responsibility of Carcajou.

III. A BRIEF SURVEY OF THE ECONOMY AND POSSIBLE FUTURE DEVELOPMENT

It appears that the economy of the Cold Lake area is based on three, and perhaps four major sectors. The most significant three are the Canadian Forces Base, the oil and gas industry, and agriculture. The questionable fourth is tourism, which is certainly spoken of prominently, and certainly contributes to the local economy, but the magnitude of its contribution is difficult to assess precisely. Tourists are primarily purchasers of food and accommodation, and their purchases are lumped in with those of other visitors and permanent residents. Fishing and trapping are important supplements to the income of some families. The service sector which supports these basic activities is, of course, a very important source of employment.

This research is only preliminary, and forms an inadequate base for good predictions, but on the basis of the available evidence it appears that most growth in the next half-dozen years will come from increases in the number of personnel at the Cold Lake Base, increased heavy oil and natural gas activity, and possibly from increases the multiplier effect in the service sector, through enhancements in services and import replacement. While potential for significant new tourist development is frequently noted, it does not appear that any specific developments are planned that would contribute a great deal economically in the next few years.

The Department of National Defence is expecting continuous growth in the next three or four years, with increases in personnel from about 2,400 to 2,900 by 1987. This will require new housing in the communities, since the Department does not plan to build more married quarters on the Base, but rather intends to provide its personnel with housing in town, leased from private developers. The Department has already called for construction of at least 100 units. In addition, spokesmen for the new Federal Government have begun to talk about major expansion of the Armed Forces, with increases in Canadian personnel, possible posting of foreign personnel, and increased frequency of NATO exercises. No firm plans have yet been presented.

The various oil sands projects are described in the next section.

The service sector can be expected to expand in two ways. First, there is the (approximately) linear expansion that takes place as new jobs are created in the basic sectors, and as new residents come into the area. Second, as the total population of the area increases, certain kinds of goods and services that were previously imported can be provided locally. For example, a larger population will support more specialty stores, supplying goods that were previously purchased in the city. Another example is specialized medical services. And so on.

While to be completely valid the analysis in Section V should be based on all developments, in fact it will be based on consideration only of heavy oil developments and expansion of CFB Cold Lake. Compared to these, developments in other sectors are likely to have only marginal effects. The possibility of growth in the service sector will be treated as an effect of expansion in the basic sectors.

IV. A SURVEY OF OIL SANDS PROJECTS IN THE COLD LAKE AREA

In situ oil sands projects of the kind being developed in the Cold Lake area require, generally speaking, three stages of development:

1. The Pilot Stage. The purpose of the pilot stage is to understand the nature of the deposits in a particular lease, to explore and test the technology and engineering that will be required to develop them, and to obtain a preliminary assessment of economics.
2. The Prototype (Commercial Test) Stage. The purpose of this stage is to make sure that the findings of the Pilot Stage will be valid for production at commercial scale.
3. The Commercial Production Stage. While at one time it was thought feasible to jump straight from the commercial test into commercial operations of very large size (22,000 m<sup>3</sup>/d in production with associated up-grading facilities), the method being used now is "modular", with production being increased in gradual increments, and decisions on up-grading facilities being postponed until production and markets will support them.

For example, Esso Resources began its first pilot stage in 1964 with its May-Ethyl project, went to a commercial test in 1973 at Leming, and finally in 1983 into construction for commercial production at its Cold Lake project, which will be developed in a modular fashion.

Chart 1 (page 54) shows a complete listing of the companies that have been involved in the Cold Lake area since 1964 and the longevity of their projects. The active companies (last column of Chart 1) are:

Companies with Large Commercial Projects:  
Esso Resources Canada

Companies with Smaller Commercial Projects or Commercial Tests:  
BP Exploration  
Canadian Occidental Petroleum  
Dome Petroleum  
Mobil Oil Canada  
Suncor Inc.

Companies with Small Pilot Projects:  
Albion Petroleum Corp. Ltd.  
Amoco Canada Petroleum  
Bow Valley  
Canada Worldwide Energy  
Chevron Canada  
Drummond Oil and Gas Ltd.  
Husky Oil  
Koch Exploration Canada  
Murphy Oil

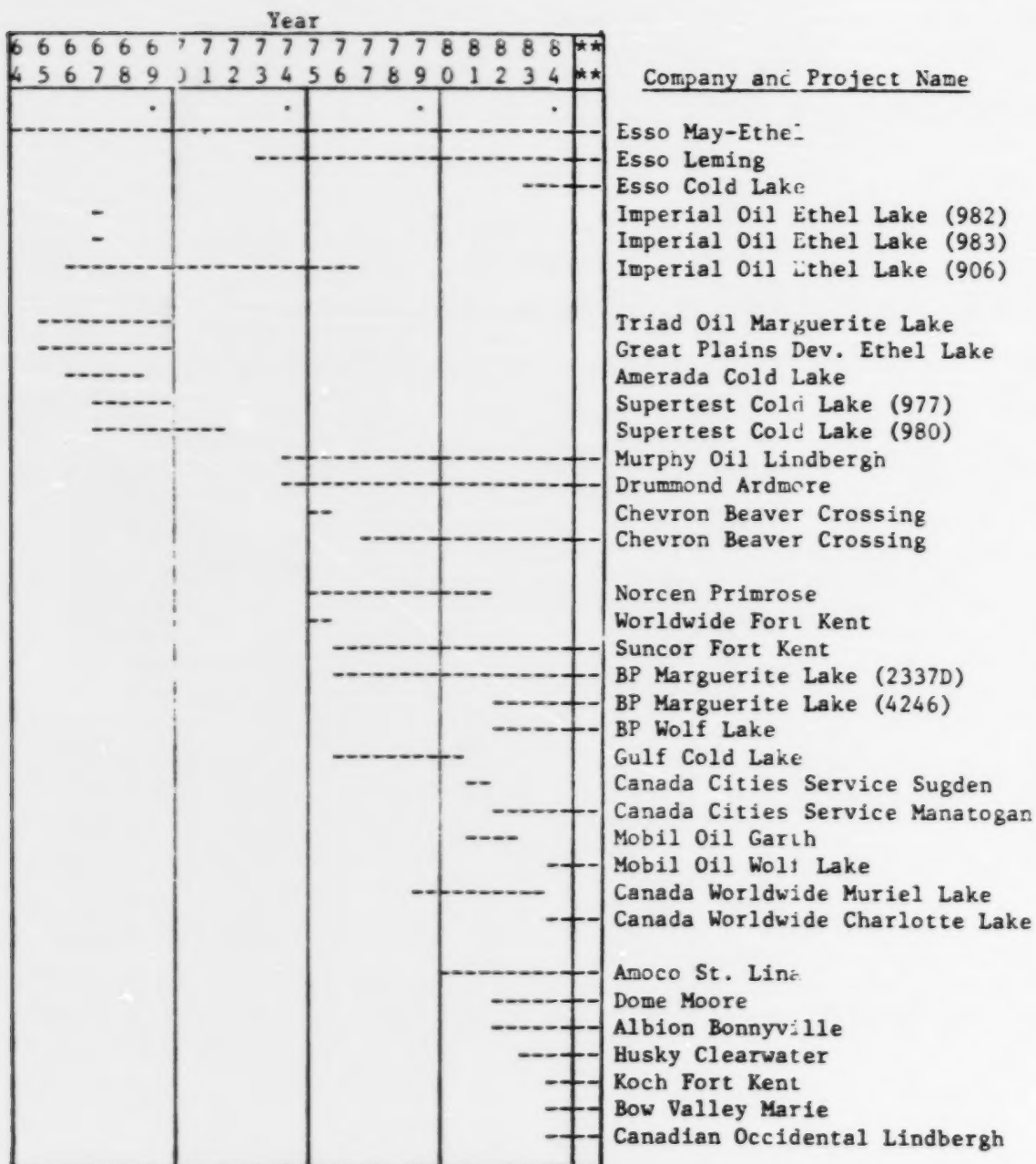
Prediction of the future for these projects, and in some cases even establishment of their present status, is complicated by two factors. First, some companies are reluctant to publish specific information for competitive reasons, or because they are engaged in negotiations with regulatory agencies over terms and conditions, or with private or governmental agencies over financial arrangements. Second, the future is genuinely clouded with uncertainty. The pace of future development will depend on progress with the technology of production, on world market conditions, on the fiscal regimes established by governments, on markets for bitumen, on the availability of up-grading facilities and the access that Cold Lake area producers would have to them, on the supply and cost of resources for production, particularly water and labour, and so on.

No one is prepared to be specific beyond 1985, and some will not even go that far. Plausible alternatives have been presented that could see activity increase, decrease, or stay at present amounts for the next half-dozen years. The research for this Discussion Paper was not extensive enough to support independent prediction, and we must base our analysis solely on the statements of participants.

Beginning on page 55 the status of each the active projects is described, insofar as it could be established within the limitations of this research.

CHART 1

Timing and Longevity of Oil Sands Projects  
Cold Lake Area -- 1964 to Active in 1984



Source: Energy Resources Conservation Board

\*\* -- Active Project

Numbers in parentheses refer to ERCB approval numbers.

1. Companies with Large Commercial Projects

ESSO RESOURCES CANADA

Esso is the largest and longest-established operator in the Cold Lake area. Its present operations consist of three related projects:

May-Ethyl (22/27-64-3 W4)

The original pilot project started in 1964, and was enlarged and debottlenecked in 1984 for production of 200 m<sup>3</sup>/d.

Leming (4-65-1 W4)

The second pilot project, started in 1984, is now a commercial project which had been authorized to produce 2,100 m<sup>3</sup>/d, and which was enlarged and debottlenecked in 1984 for an approved production of 2,600 m<sup>3</sup>/d.

Cold Lake (18-65-3/4 W4)

This is a new commercial project. Phases I and II are now under construction, and will be producing 3,000 m<sup>3</sup>/d by 1985. The project involves 800 wells, of which 220 will be producing at any given time.

Work has begun on Phases III and IV, which will add a further 3,000 m<sup>3</sup>/d by 1985.

It appears feasible to proceed with Phases V and VI more rapidly than was previously anticipated, but no decision has been announced.

Each pair of phases requires from 500 to 700 construction workers (peak employment) and creates 80 to 90 permanent jobs. The company hires on the basis of qualifications, but makes extra effort to make both employment and business opportunities available for local people.

Primrose Lake (with Alberta Energy Company)

A three-year \$30,000,000 evaluation program began in 1984, involving 200 km of seismic and 80 evaluation wells. After evaluation a commercial project could be built that would produce 1,500 m<sup>3</sup>/d by 1990.

2. Companies with Smaller Commercial Projects or Commercial TestsBP EXPLORATION

BP operates two projects on its Marguerite Lake leases 30 miles north of Bonnyville. In its Phase A project (partners: AOSTRA, Dome Petroleum and Pan-Canadian) BP is testing "a dual recovery technique of cyclic steam stimulation followed by in situ combustion". Operations are scheduled to continue until 1985. At Wolf Lake (partner: Petro-Canada) BP has launched a much larger commercial test project, which will lead to production of 1,100 m<sup>3</sup>/d in 1985. In its 1983 annual report BP describes its research into drilling techniques, which have reduced the time necessary to drill a well to as little as 26 hours.

CANADIAN OCCIDENTAL PETROLEUM

Canadian Occidental has two projects under way on the edge of the study area. At Lindbergh the company will be testing two wells at a small pilot. Just west of Manatokan Lake Canada-Cities Service, now owned by Occidental, has had a one-well pilot for a number of years. In 1986 a larger project will become operational, with 32 wells--12 injection, 20 producing--and eventual production of from 190 to 250 m<sup>3</sup>/d. The company hopes to make arrangements with Alberta Energy to transport the bitumen in AEC's pipeline.

DOME PETROLEUM

Dome has announced its intention to develop a 4,000 m<sup>3</sup>/d operation on the south edge of the Primrose Lake Weapons Range, provided that necessary approvals are received and satisfactory fiscal arrangements negotiated. The project will be built in five stages of 800 m<sup>3</sup>/d each; the first stage could be under way in 1985.

MOBIL OIL CANADA

Oilweek reported in March 1984 that Mobil had drilled 104 wells on its leases in the Cold Lake area, and that "encouraging production" has resulted. No further details could be obtained.

SUNCOR INC.

Suncor is operator of the Fort Kent Thermal project, which had been designed as a 800 m<sup>3</sup>/d commercial test, using water from the Bonnyville sewage lagoon to produce steam. Recent drilling and seismic work has proved disappointing, however, and plans are being reduced in scale. Production is now at about 550 m<sup>3</sup>/d. Some minor further expansion is possible (perhaps an additional 60 m<sup>3</sup>/d) but no additional staff are likely to be hired. Present employment is approximately 60 people.

3. Companies with Small Pilot Projects

ALBION PETROLEUM CORP. LTD.

In March 1984, Oilweek reported that this company was operating a one-well pilot at Bonnyville. No further details are available.

AMOCO CANADA PETROLEUM

Although the Amoco St. Lina pilot (7 wells) about 11 miles north of Glendon is listed in the ERCB summary issued in August, Oilweek reported in March that the pilot has been suspended.

BOW VALLEY

This company, in partnership with Cold Lake Heavy Oil Ltd. and AOSTRA, has taken over the former pilot site operated by Gulf in the late 1970's. They have drilled seven wells and begun operations to test a process combining steam stimulation with CO<sub>2</sub>, in order to reduce viscosity and bring steam consumption levels down roughly to economic levels (approximately 3-4 units of water per unit of bitumen). Because of the nature of the deposits under this site, water consumption without CO<sub>2</sub> was considerably higher. The first phase of the pilot began in October 1984 and will take approximately 18 months. Decisions about any second phase (enlargement of the pilot) will be taken when results of the first phase have been evaluated.

CANADIAN WORLDWIDE ENERGY

Canadian Worldwide is involved in two projects in the study area. First, it holds a 50% interest in the project at Fort Kent, of which Suncor Inc. is the operator, and which was described earlier. Second, the company holds a 25% (increasing to 50%) working interest at Charlotte Lake (28-60-3 W4), just beyond the southwest corner of the Cold Lake Reserve. Approvals have been obtained for a six-well pilot that would utilize cyclic steam injection techniques, but the project has been temporarily suspended. Its status is not expected to change for the next couple of years.

Canadian Worldwide also holds an interest in properties at Muriel Lake (22-59-4 W4), on which an active pilot was in operation in 1983, when ten new wells were drilled. Operations were suspended in January 1984 because oil production rates were insufficient.

CHEVRON CANADA

Chevron Canada operates a small (7 wells drilled in 1977) pilot near Beaver Crossing, east of the Cold Lake Reserve. Production averages about 25 cubic metres per day. Commercial expansion is not foreseen at this stage.

DRUMMOND OIL AND GAS LTD.

The Ardmore pilot project has been in production since 1975, and now produces about 15 m<sup>3</sup>/d.

HUSKY OIL

Husky's Tucker Lake pilot project now has 6 wells, and the company is proposing to drill perhaps 2 more for the time being, and to continue its experiments. A company spokesman reported "plenty of oil, but plenty of problems". Further plans are very uncertain.

KOCH EXPLORATION

Two wells have been drilled for a small pilot project at Fort Kent, immediately southwest of the Suncor project, and one steam cycle has been run on each well. The company is evaluating the results. Details of future plans are confidential.

MURPHY OIL

This company is expanding its Lindbergh project to 16 wells.

4. Summary and Conclusion

It is very difficult to arrive at a precise statement about the current state of the Cold Lake oil sands resource and its prospects for development. Clearly, as the man from Husky said, there is "plenty of oil", but the market seems to be very soft (relying heavily on paving plans in the United States), and the technology is far from fully developed. Certain deposits show great promise. Others are much more uncertain.

Construction of up-grading facilities are Lloydminster could expand the market. No estimates are available on the amount of bitumen a Lloydminster up-grader might take from the Cold Lake area. Pipelining of bitumen depends on a reliable source of diluent (condensates or other light hydrocarbons), and while for present levels of production no shortage is foreseen, the Bowden refinery and petrochemical plants also use the same hydrocarbons, and their needs are given priority over pipeline diluent.

The construction labour force in the area increased rapidly from 1982 to 1984 largely as a result of Esso's project. It appears that for the next year or so the construction labour force will continue at approximately its present levels. After that, the picture becomes very uncertain. Operating labour forces will of course continue to expand with production.

An optimistic projection of production possibilities, under present market and technological conditions (which are of course subject to rapid and unpredictable change) would see production reach 20,000 m<sup>3</sup>/d by 1990, which

would mean a production labour force of approximately 550, if Esso's ratio of 80 to 90 people per 3,000 m<sup>3</sup>/d is applied.

While careful prediction of the labour-force and population effect that the construction and operation of facilities for this production might have is impossible within the constraints of the research for this Discussion Paper, it does not appear on superficial analysis that it should average more than 2% per year, at the most, from 1984 to 1990. (This assumes explicitly that any major increases in the direct construction labour force have already been experienced by 1984, and that construction will continue at the present rate, so that the direct construction labour force does not decline.)

In Section V we will examine the effect that such an increase might have, when combined with other increases, particularly in CFB Cold Lake.

V. ANALYSIS OF EFFECTS(a) Summary of the Model for Analysis

The model that we use to assess the likelihood that a development will have significant effects (beneficial or otherwise) on a community or area is simple in structure. It begins with identification of participants as broadly either agents or reagents. Agents are those participants which bring development or change to an area, in this case, the companies engaging in oil sands projects and the Department of National Defence; the communities and people of the area are the reagents. Clearly the relationship between the agents and reagents is not a simple one in which one always acts and the other always reacts, since there is feedback between them. But broadly speaking, for purposes of analysis, identification of agents and reagents in this simple-minded way is valid and useful.

A third kind of participant is government, which has a complex role as both agent and reagent. It is an agent itself (DND), a partner or supporter of the companies in their actions, a regulator of their activities, a partner of the communities and people in their reactions, and a mediator.

The model then identifies characteristics of the agent and the reagent that influence or determine the nature of both beneficial and detrimental effects.

Characteristics of the Agent(1) Size

The size of both the agent and the reagent must be considered, or rather the size of the agent relative to the size of the reagent. Often the easiest way to deal with size is to look at the new workforce as a percentage of the pre-development workforce, at percentage changes in induced population, etc. In general, the larger the agent (relative to the reagent) the greater the effect.

(2) Geographical Patterns

The more physical distance between the agent and the reagent, the less the effect. Geographical dispersion is important too: in some cases the agent may be very concentrated in a small area, in others it may be found in various forms over a wide area.

(3) Length of Stay

A brief stay tends to have less effect than a more prolonged one.

(4) Types of People

Different kinds of agents will bring different kinds of people with them; or the kinds of people may change as a development goes

through its various phases. Effects will depend greatly on the demographic characteristics of the agent's workforce, on whether workers bring their families with them, on whether they plan to stay, on their recreational habits, etc.

Characteristics of the Reagent

In addition to size, the important characteristics of the reagent are its adaptability, its diversity, the state of development of its services and infrastructure, and the degree to which it is or feels confined.

(1) Adaptability

This is a very complex variable, and this is not the place to explore it in detail, but very crudely, some societies are better able than others to adapt themselves to change. Some societies adapt well to certain kinds of change, and not to others. To a very considerable extent, experience with change is an important determinant of adaptability.

(2) Diversity

Diversity is a two-edged variable. On the one hand, more diverse societies are in general more adaptable. On the other hand, social and economic diversity almost always brings a degree of segmentation, such that some people will be in a better position to benefit from a new development than others, and some people will be in a worse position than others as far as ill effects are concerned.

(3) Services and Infrastructure

This is an obvious variable. The better the services and infrastructure that are in place, the lower the costs and the greater the benefits of new development.

(4) Degree or Sense of Confinement

This is another complex variable, with some interesting psychological dimensions. Sometimes it is referred to as "isolation", but "confinement" is probably a more precise and accurate term. People can be quite content with isolation, depending on their tastes, but in general people do not like confinement. In practical terms, for analysis of the social impact of development, this variable often is closely linked to distance from a major population centre. If a major centre is relatively nearby, such that people can easily get to it, then they feel less confined, and more at ease.

(b) The Cold Lake Area: Characteristics of the Agents

(1) Size

At the end of section IV, it was crudely estimated that the average workforce/population increases that might be expected from oil sands development in the Cold Lake area might be, at the most, 2% per year from 1984 to 1990, under present market and technological conditions. The other major development that is expected is an increase of about 500 in the number of personnel at the Cold Lake Canadian Forces Base. Because new housing will be required in the nearby communities, this should induce some significant short-term activity in that sector, and of course the usual longer-term multipliers can be expected.

Growth induced by expansion of CFB Cold Lake will come between 1984 and 1987, and including multiplier effects should add to approximately 2% to 2½% growth in regional employment per year for those four years.

Noting again all appropriate warnings about the preliminary nature of this analysis, and its crudity, it would appear that the cumulative effect on regional employment from the two major sources of expansion should be approximately 4% per year until 1987, and about one-half that amount from 1988 to 1990.

In order to translate this into effects, we must make some assumptions. First, we will assume that most of the population growth will take place in the three towns of Bonnyville, Grand Centre and Cold Lake. There is no particular reason to assume that it will tend to be concentrated in any one town; all are well located with respect to one or the other or both of the major activities, and all should be in a position to grow, if they so desire. Differences in local policies towards growth, and differences in entrepreneurial strength, may however give one or another of the communities a greater capacity to attract people. We have no information about these variables, but experience in other places suggests they can be important.

Second, we will assume that the employment multiplier is about 1.5.

Third, we will assume that much of the induced growth in service-sector employment will be satisfied through hiring of local people, as will some (a smaller proportion) of the direct hiring. Thus multiplier effects in employment will be translated into somewhat smaller effects on population.

Based on Alberta Municipal Affairs' 1984 statistics on full-time and part-time employment in the three towns, it would appear that the direct and indirect employment resulting from oils sands development and CFB expansion will be an increase of about 35% in the number of jobs available to their combined population, from 1985 to 1990 (6 years). Some of this will be absorbed by present residents who are unemployed or not in the labour force; estimation of those amounts becomes very speculative. Undaunted, however, by uncertainty and lack of data, we conclude that the population increases that might be expected in the three towns from new activity in the next half-dozen years should be no more than 5% per year until 1987, and 3% per year from

1988 to 1990. These rates are substantial. Whether they produce "boom" conditions will depend on other factors, which will be discussed.

For business activity, growth in total population is less important than growth in total income, or rather in total local expenditures. The analysis, speculative enough already, becomes more so when prediction of income and expenditure effects is attempted. Total income should increase more than total population, because of decreases in unemployment, increases in participation rates, and migration of people into higher-paying forms of employment. Total expenditure should, if local entrepreneurs are on their toes, increase more than total income, because of opportunities for import replacement, especially in specialty goods, that result from a larger population. Substantial import replacement is a longer-term process, however, and will not likely be felt until the end of the decade.

#### (2) Geographical Patterns

Activity is distributed fairly evenly throughout the northern two-thirds of the study area. Although Esso is closer to Grand Centre and Cold Lake, Bonnyville is well located with respect to the Esso development, and even more so with respect to the other larger projects. Grand Centre and Cold Lake are, of course, much closer to CFB Cold Lake. In general, therefore, it appears that the potential for population growth is quite evenly distributed among the three towns. Bonnyville will probably attract a disproportionate share (not all) of oil-sands activity and population; Grand Centre and Cold Lake should receive most of the growth resulting from CFB Cold Lake. Alert planning and aggressive entrepreneurship by one community or another could affect the actual distribution of growth.

#### (3) Length of Stay

Both military personnel and operating personnel for commercial oil sands projects can be treated, for all practical purposes, as permanent additions to the work force. Personnel for pilot oil sands projects and commercial tests are likely to be of varying but generally intermediate permanence. Because the modular form of construction for large commercial projects is likely to remain in use, construction work forces will be more permanent than is normal in large resource projects. Short-term influxes of construction workers for particular projects (housing, commercial development, etc.) can be expected, but the proportion of short-term construction workers should be less than the normal experience.

#### (4) Types of People

Generally speaking, new growth is most beneficial if it brings people who are relatively permanent additions to the population, who are interested in participating in community activities, and who spend their money locally. It tends to bring more problems with it if people are transient and fond of boisterous forms of recreation. While some of the latter can be expected among construction workers and transient military personnel, on the whole the prospects for attracting a good proportion of permanent, community-building residents appear to be good.

(c) The Cold Lake Area: Characteristics of the Reagent

Analysis of the characteristics of the reagent are complicated by the fact that the first three important characteristics--adaptability, diversity, and services/infrastructure--are highly inter-related. They have important individual characteristics, however, and will therefore be separately discussed.

(1) Adaptability

Adaptability is enhanced if the area has had experience with growth of similar kinds in the past, if the population is relatively young, if a good system of planning, services and infrastructure is in place (see part (3)), and if the new growth does not bring conflicts with existing activities and interests, that is, if it inflicts damage on them without an compensating benefits (see part (2): Diversity). People are better able to accept the hardships of a situation if it also has some advantages.

The Cold Lake situation is unusual in that the area's recent experience is not so much with development, as with development that was anticipated and did not materialize. The shock of uncontrolled speculative activity was followed closely by the shock of unfulfilled expectations. What the communities are experiencing now, regardless of its dimensions, is at least real.

Table 1 shows the age characteristics of the Cold Lake area's population in comparison with the Province of Alberta. The most adaptable age group is, generally, the second one (ages 15 to 34). The others are less adaptable, but to varying and unsystematic extents, depending on local conditions. These statistics will not support any strong statements on the adaptability of the Cold Lake area population, one way or the other.

Table 1

Cold Lake Area Population Age Profile  
(Excluding Indian Reserves)  
In Comparison with the Province of Alberta

| <u>Age Group</u> | <u>Cold Lake Area</u><br>(%) | <u>Alberta</u><br>(%) |
|------------------|------------------------------|-----------------------|
| 0 - 14           | 28.5                         | 24.2                  |
| 15 - 34          | 39.8                         | 40.9                  |
| 35 - 64          | 26.2                         | 27.6                  |
| 65 Plus          | <u>5.5</u>                   | <u>7.3</u>            |
|                  | 100.0                        | 100.0                 |

Indian people form one particular group whose adaptability to resource development on a large scale is normally a source of concern. Carcajou carried out a field study on the Kehewin Reserve in 1979, and it appeared at that time that chances for successful participation were reasonably good, at least by some residents, if proper training programs were put in place, and if the companies gave the necessary support and encouragement. As far as we know that conclusion is still valid. We have no comparable information about the Cold Lake Reserve.

## (2) Diversity

As was discussed earlier, diversity can be both a source of strength in adapting to a new development, and a source of problems. Diversity presents contractors, businessmen and employees with varying situations, and gives them experience in adjustment. Diversity also increases the possibilities for conflicts over resources (especially land use). Some sectors in a diverse economy may not benefit from a new resource development, and may even be hurt by it.

The situation in the Cold Lake area is much too complex for any firm conclusions to be drawn at this stage. Clearly the region is reasonably diverse economically and socially, and should be able to adjust to take advantage of the new activities. Indeed, there is considerable evidence that such adjustment is taking place satisfactorily in many cases.

The question of possible conflicts, however, remains unresolved. Conflicts with recreational activities, with trap-line operators, and with road users, have already been identified. Some of these may have been resolved, to some extent, or may be in the process of being resolved. The relationship between the new activities and the agricultural sector needs to be further explored, before it can be properly described. A traditional symbiosis exists in northern Alberta between agriculture and the oilfields, through off-farm employment. We have no information about the extent to which this is effective in the Cold Lake area at present.

There will certainly be people for whom the new developments are an unmitigated source of distress, just as there will be people for whom they will be an unmitigated blessing. People whose livelihood is not tied to the new activities, whose work is made more difficult or more costly by it, whose traditional recreational activities become restricted or disappear as the countryside opens up, who have accommodated themselves to existing shopping and service regimes and who do not particularly need or value improvements in these areas--these people will be distressed by the change. Such people exist, and are frequently long-time residents who have made great contributions to their communities. On the other hand, there are people in converse circumstances, whose lives will unequivocally be improved. There are people whose reactions will be mixed.

People seem to adapt, eventually, to just about any set of circumstances, and societies return to normal after even cataclysmic shocks. The physical environment and wildlife may not be as resilient. This is not an subject in which we have expert knowledge, but we can state on the basis of

information that we have, that concern over water management is still very active locally. Claims by both government and industry that the situation is under control are viewed by some with scepticism.

### (3) Services and Infrastructure

The state of services and infrastructure is extremely important to the kinds of effects that new development will have. It appears to us that the Cold Lake area is unusually well off in this respect. The details of the services that are available are laid out in the community profiles in section II, and need not be duplicated here. We conclude generally that both services, and the mechanisms for planning and improving services, are well developed.

Three reasons have been identified for this state of affairs. First, the area had a substantial population before these new developments arrived. The growth in population that they will induce, while substantial, is not overly large relative to the existing population. Second, the area has benefited from preparations for the cancelled mega-project. This is particularly evident in schools, hospitals, and serviced land. For example, it appears that there are nearly enough serviced lots in Bonnyville, Grand Centre and Cold Lake to take care of the entire population increase up to 1990. Third, present development is proceeding in a phased or modular way, that avoids concentrated demands on services and resources. In short, the area can anticipate steady, moderate and substantial population growth, added to a strong base. Services should be able to keep up, both by taking advantage of their present capacity, and by enlarging that capacity.

There are still some gaps, of course. Traffic and dust from oil trucks on back roads is still a source of irritation and concern, although pipeline development is reducing the need for trucking, and some road improvements have been made. A government planning group (headed by Alberta Energy and Natural Resources) has been formed to look into the infrastructure needs of industry in the area, including roads.

A problem that will perhaps be not easy to solve is shortage of rental accommodation. This is a common problem in areas of new development, and causes inflated rents and all kinds of unhappiness, as families either struggle to pay those rents, or resort to sub-standard housing. Sometimes the intense demand is short-lived--construction workers move away, and permanent families move out into single-family areas. Entrepreneurs who build rental accommodation to meet the peak demand can be badly caught.

We should not leave Services and Infrastructure without mentioning the Community Advisory Committee, which has a unique and interesting role as a coordinator of local input and a liaison between local people and agencies and government. Some centralized clearing-house for ideas and communication seems to be a most valuable part of resource development infrastructure, and can assist by reducing political frustration (in all directions) and in the more timely development of methods of response.

(4) Degree or Sense of Confinement

One of the key elements in determining the reactions of new people coming into an area is the degree to which they feel that they are confined in an unfriendly environment, isolated from friends and family, and from services that they need. Where people do not feel confined, the level of personal and family stress associated with the change will be reduced.

In the Cold Lake area circumstances are such that a sense of confinement need not become overwhelming. In the first place, services are well developed locally, and should continue to improve. Programs like Family and Community Support Services, churches and service clubs can do much to reach out to newcomers, to welcome them, and to introduce them to the services and activities that they need. For the most part the services are in place and do not need to be started from scratch. It is traditional that the introduction of newcomers causes upheaval in some organizations, but the process is healthy on the whole.

Second, the Cold Lake area, or at least the western part of it near Bonnyville, is close enough to Edmonton for people to drive to the city, shop, and come back, all within one day. For people in the eastern part it would be a long day, but a feasible one.

For local merchants the sight of people streaming down the highway to shop in Edmonton is always an unpleasant one, but on the whole proximity to a major centre is beneficial.

(d) Summary and Conclusion

In short the Cold Lake area, with a well-developed system of services, appears to be experiencing substantial growth at a moderate rate, extended over a relatively long period of time. The evidence seems quite consistently to say that the growth is manageable, not unduly disruptive, and should yield benefits that out-weigh any costs. There will be costs, and some people's lives will be disrupted, but on the whole the growth appears to be healthy.

Two areas of concern have been isolated, on which communities and government should work together. The first is water management, which has very serious long-term implications. While the initial steps have been taken, in preparation of a water management plan, continuous monitoring by credible observers will be necessary, both for the sake of common prudence, and for the sake of everybody's peace of mind. Ideally, monitoring should be a joint industry/community/government venture, and the results should be freely available.

The second, which is more a short-term than a long-term problem, concerns the supply of rental accommodation. In order to ensure an orderly rental market, it may be necessary for municipalities to intervene more actively than they would like. Private enterprise may quite legitimately not be able to respond to the extent that the communities require. There may be no easy way to supply enough rental accommodation at reasonable prices, but the matter is at least worthy of study and further discussion.

We do not think that a general social/economic impact study is required in order to design mitigative measures. There is no doubt, however, that such a study would make a valuable contribution to the literature on social/economic impact. The circumstances are quite different from other areas where such studies have been done.

We do not mean to suggest that further planning is not necessary, only that a social/economic study is probably not the best vehicle. If programs or community organizations wish assistance in development of plans to accommodate new developments, it could be more productively supplied through workshops and mini-processes than through a general social/economic impact study.

It might perhaps be feasible for the Community Advisory Committee to undertake to meet with different programs and community agencies, and to work with each one of them to review the state of services and programs, and to work on local strategies. Even if they required some technical assistance to perform this task, the results would have a stronger local base, and the process would be more efficient and valuable, than if outside consultants were used.